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RELATING TO

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TO MY SUBSCRIBERS.

Since my last annual address, issued on the 1st of December, 1868, the 'Illustrated Natural History of British Moths' has been completed, and has solved a great problem: its sale has proved that there is an entomological public content to forego the technicalities of Science, and to accept plain English descriptions of English subjects, written from the objects themselves. I have now to offer the volume, strongly and handsomely bound in cloth, at Twenty Shillings.

The 'Dictionary of British Birds' supplies a want universally felt among ornithologists. I presume that all the Subscribers to the 'Zoologist' possess this edition of Colonel Montagu's indispensable work, but they may render me a most important service by recommending it amongst their friends.

The sale of the 'Zoologist' has, I regret to say, suffered a small diminution. That of the 'Entomologist' has, on the contrary, increased in the most satisfactory manner: complaints, however, still reach me of great difficulty in obtaining it through the usual channels of the trade. I exceedingly regret that it should be so; but would suggest prepayment at this office as a certain remedy and a guarantee for punctual delivery.

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Life-Histories of Sawflies. Translated from the Dutch of M. S. C. SNELLEN VAN VOLLENHOVEN, by J. W. MAY, Esq.

(Continued from Zool. S. S. 1959.)

EMPHYTUS CINCTUS, *L.*

Linnæus, Syst. Nat. i. 2, p. 925, No. 52. *Panzer, Fauna Germ.* cxliv. 18 and 19. *Klug, Die Blattw. in Gesellsch. naturf. Freunde zu Berlin Magazin,* 8er *Jahrg. S.* 279, No. 194. *Hartig, Blatt und Holzwespen,* p. 248, No. 3. *Dahlbom, Clavis n. Hym. Syst.* p. 35, No. 54. *Bouché, Naturgesch. des Ins.* p. 139. *Brischke, Abbild. und Beschr.* p. 16, taf. iii. fig. 6.

I was long in doubt whether I should publish the description of this species, for not only did my observations respecting the colour and ornamentation (if it can be so termed) of the larvæ not agree with the descriptions of Bouché and Dahlbom, with which I have for some time been acquainted, but also even my own descriptions of larvæ, from which I had at various times reared this species, did not entirely coincide. I was at last driven to the conclusion that this species proceeds from a larva, the individuals of which differ materially from each other, and I adopt this hypothesis until it shall be shown that certain very nearly allied species, of which the imagos have hitherto not been able to be distinguished, live on the same food-plant, and have all the same habit of life.

My first acquaintance with this insect is of old date. I remember when a boy having reared this species, as also Cladius viminalis and Nematus Salicis, whilst staying at the country seat of my grandparents. My first drawing of the larva, however, dates from the 18th of July, 1842: this is the one from which figs. 1 and 2 on plate 3 were made, and agrees pretty well with the description given by Brischke of Emphytus viennensis. I subsequently reared precisely the same sawfly from other larvæ, having the coloration and general appearance as shown at fig. 3; at all events, I was unable to discover any difference between the imagos.

My general description of the larva will be as follows:—Body cylindrical, but smaller in diameter at the posterior than at the anterior extremity, deeply wrinkled, always curved, never extended at full length; when at rest rolled up in a spiral form, with the caudal

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extremity resting against the side of one of the segments between the fourth and the eighth. Legs twenty-two in number; the fourth segment apodal. Head nearly globular, depressed anteriorly; smooth on the vertex, clothed with exceedingly fine white hairs, and of a pale brown or sordid yellowish gray. On the vertex a wedge-shaped dark or very dark brown spot; two pale spots or maculæ behind the eye-spots, which are round and black. Mandibles luteous. Some individuals are found having the head purple as far as the eyes, with the exception of two small pale triangular marks obliquely above the eyes, thence obscure yellow. The back is often more or less humped just behind the head.

The back is obscure green, in some individuals moderately dark, in others paler, as far as the stigmata. On the neck, above the first stigma, is a brown or blue smear. The ventral surface and the sides below the stigmata are sordid white, sometimes approaching a yellow tint; the legs are of the same colour. On the anterior coxæ are some little black lines; above each median and posterior leg is a gray spot, sometimes replaced by a black line, as in fig. 2. Brown spinous points above the anus. On each segment of the abdomen (see fig. 4) are three rows of little white spines, the anterior row containing only four or five, the two others ten or twelve each. The thoracic legs are armed with brown claws. The stigmata are white; the large tracheæ can be perceived through the skin. Other individuals were observed having the neck darker than the back, but wanting the marking on the neck so clearly shown in figs. 1 and 2; they also had the thoracic legs of a greenish tint. Bouché gives a description of the larva differing from this in some points: he says, however, "Uber den dunkelgrünen Rücken läuft eine hellere Linie und vier Reihen schwarzer Flecke, so dass auf jedem Abschnitt vier zu stehen kommen." The largest of these black spots were observed to be *above* the small brownish yellow stigmata. He also noticed above the abdominal legs two nearly contiguous rows of pale gray spots.

Brischke also speaks of black spots dividing the green from the sordid white colour of the sides, and which are thus above the stigmata. Dahlbom likewise mentions these same spots, at least if I rightly understand his words, "macularum seriebus longitudinalibus utrinque duabus nigris." I have not observed any such spots above the spiracles in the examples I have had.

Observers are pretty well agreed as to the life-history of the larva, with the exception of one point, namely, the number of generations in the year, to which I shall recur immediately. Authors state, and I can confirm the statement, that the larvæ in question are found rolled up in a spiral on the under sides of rose-leaves. I, however, also observed them resting on the upper surface of the leaves. They are very sluggish, and appear to feed in the early morning or during the evening twilight; whether they feed at night I do not know. I sometimes found them on the same leaf on successive days, from which I conclude they seldom move about during the night. I observed no difference of habit between the full-grown larvæ and very young ones; that is to say, larvæ which, as far as I could guess, had moulted only once. Dahlbom seems to consider that after the last moult they have a different colour or appearance to what they had previously; his mistaken reference to Réaumur has betrayed him into this error. I could perceive no difference, except in size, between a half-grown larva and one which had spun up.

With regard to the number of broods in the year, Brischke considers there is but one; Hartig thinks there are more. I believe we may safely conclude the latter is correct, seeing that the perfect insects are found from May to August, and young larvæ are met with in the last-named month.

On attaining its full growth the larva lets itself fall to the ground, where it undergoes its change without spinning up, or it creeps into a crevice in the bark or a split in a paling for the same purpose, or it bores for itself a passage in the pith of a branch of a rose tree which may have been cut off: this passage is sometimes from two to three centimetres deep, and in it the larva seems to be able to turn itself round; at least it is found with its head directed towards the opening, but having its head more or less concealed by frass.

In this hiding-place the larva passes the winter, and does not change into a pupa until late in the spring: this pupa is of a pale blue colour, resembling our fig. 5, which gives a magnified representation of one ensconced in a branch. For the rest there was nothing peculiar in the appearance of the pupa. The imago was produced from the pupa here figured on the 20th of May.

The females are infinitely more numerous than the males, the latter being seldom seen. The female is scarcely 5 mm. long, shining black and glabrous, somewhat more brownish on the thorax, and being a little more bluish on the abdomen. The neck is pretty long, and the upper surface is devoid of any hard integument: there is a similar bare place in the middle of the dorsum of the first abdominal ring. The cenchri are white; the fifth abdominal segment is also white; the attachment of the following segment shows through as an indistinct ring; coxæ and femora blue-black, the anterior knees reddish; tibiæ red, those of the posterior legs white at the base; tarsi red, with brown claws. The stigma of the wings is blackish, with a white base; the wings themselves are somewhat smoky.

Besides being smaller the male differs from the female in having the fifth abdominal segment black, and in the absence of the white base to the hinder tarsi.

I have not observed the act of ovipositing, but in the month of August I found some eggs on a rose-leaf stowed away in little bags on the leaf, the skin on both sides of these little bags being brown. From these eggs proceeded little caterpillars of a gray colour, with black heads (see fig. 9 *b*); they ate holes from the under side of the leaves to the upper, and, both in appearance and the manner in which they lay rolled up, entirely agreed with the larvæ just described. I left them in the open air, where they were unfortunately washed off or killed by the rain and wind. I conclude these little larvæ were those of our species, and have therefore given a figure of them on this plate. The claws of this insect are remarkable; one is represented at fig. 10: they consist of three moderate-sized crooked and rather blunt teeth, united together into a sort of comb. Each foot has two such diverging little combs.

Notes on Aphides. By FRANCIS WALKER, Esq., F.L.S.

(Continued from Zool. S. S. 1333).

Myzus Cerasi (S. S. 1121).—The male of this species appears in October. It is black; the antennæ are much longer than the body, and the joints except the seventh are slightly incrassated; the nectaries are nearly one-fourth of the length of the body; the legs are long and slender; the femora and tibiæ dark green, black towards the tips; the wings are twice the length of the body, the stigma black.

M. Persicæ (S. S. 1121).—I wish to call attention to the characters by which Passerini distinguishes Myzus Persicæ, *Passerini*, from Aphis Persicæ, *Fonscolombe.* The latter abounds on peach trees in England. The antennæ on a frontal tubercle distinguish Myzus from Aphis.

M. Lychnidis (S. S. 1122).—It is remarkably abundant in the Channel Isles, and I have also found it in the Isle of Man. Passerini mentions two species of Aphidinæ that infest the Lychnis; I have only observed one in England.

M. Oxyacanthæ (S. S. 1122).—It appears in July, and the following description refers to the apterous female. Pale green, shining, nearly elliptical, very finely punctured. Antennæ longer than the body; tips of joints black. Nectaries about one-fifth of the length of the body, converging towards each other. Legs long, slender; tarsi and tips of femora and of tibiæ blackish. Length ⅗ line.

M. Ribis (S. S. 1122).—This species is more widely different from M. Cerasi, the type of Myzus, than the latter is from the genus Aphis as it is now limited. A new generic name is therefore required for it. It is the common Aphis of the red currant, which, like the black currant and the gooseberry, is also infested by the three following species:—

1. Rhopalosiphum Lactucæ (S. S. 1118). Aphis Lactucæ, *Kaltenbach;* Rhopalosiphum Ribis, *Koch.*—Koch refers to this species the Aphis Ribis of Linné, of Schrank and of Kaltenbach.
2. Aphis Ribicola, *Kaltenbach.* This and the following species have not hitherto been recorded as British. It should be transferred to the genus Myzus.
3. Aphis Grossulariæ, *Kaltenbach.* In 1869 I found this species in abundance.

Koch correctly mentions his Siphonophora Ribicola as the Aphis Ribis of Linné, of Frisch and of Fabricius, but it is also the Aphis Ribis of Kaltenbach, and not the A. Ribicola of that author.

M. Mahaleb (S. S. 1122).—The sloe is certainly the permanent habitation of Phorodon Humuli, and I still believe that the latter is Aphis Mahaleb, *Fonsc.*, though Passerini states that it is not so.

Hyalopterus Pruni (S. S. 1123).—This is one of the species whose history is yet incomplete, notwithstanding the excessive abundance in which it occurs. H. tetrarhoda may be removed from this genus, which is connected by some intermediate forms with Atheroides, but has most affinity to Phorodon.

Aphis Saliceti (S. S. 1296).—No English description of this species has yet been published. It occurs occasionally in large swarms on the shoots of the willow, and is remarkable on account of the various colours which it assumes. It often has an orange hue.

A. Cardui (S. S. 1297).—It is more allied to the genus Myzus than to Aphis; and is less abundant than many species, and no English description of it has yet been published. *Apterous female.*—Green, oval, very plump and shining, with slight black bands. Antennæ slender, whitish, blackish towards the tips, much shorter than the body. Abdomen wholly black, except towards the base. Nectaries black, about one-eighth of the length of the body. Legs whitish; femora, tarsi and tips of tibiæ black. *Var.*—Body wholly black. *Winged female.*—Black. Antennæ very much shorter than the body. Abdomen green, with black bands. Nectaries black, about one-fifth of the length of the body. Tail rather long. Legs green; femora towards the tips and tarsi black. *Var.?*—On Senecio Jacobæa. Pale red, or with the disk of the body shining black. Nectaries not more than one-tenth of the length of the body.

A. Sedi (S. S. 1297).—This is a very small species and not of frequent occurrence. I have considered it and many others that have been described by different names as variations of A. Rumicis. Nearly all the migratory species of Aphidinæ are definite in their selection of plants for their new habitation, but A. Rumicis in the winged form is extremely indiscriminate as to where it alights and multiplies. Sometimes the offspring perish quickly, sometimes they linger for awhile; in other instances they thrive more or less and are altered by their food, but their existence does not pass into the male nor into the oviparous female, and therefore they cannot be considered as true species. Many volumes might be written on the migrations and settlements and consequent variations that occur.

A. Hederæ (S. S. 1298).—Kaltenbach, who first characterized A. Hederæ and A. Ilicis, suggests that they may be varieties of one species, and I have been unable to detect any permanent difference between them, and accordingly consider them as one species. I have tied a twig of ivy covered with Aphides to a shoot of holly: the Aphides crawled from the ivy to the holly; they did not feed there, and soon passed away. This might be expected, for the apterous form of Aphis, as the genus is now restricted, never moves from the spot where it feeds until its food withers, and then it perishes. The winged form hardly feeds after it migrates.

A. Sambuci (S. S. 1298).—Passerini cites this species as the type of the genus Aphis as it is restricted by him. Some of the species which he enumerates should be excluded from it, and it comprises very numerous closely-allied species, or, it may be, forms whose respective differences are occasioned by their food. The oviposition of A. Sambuci has not yet been observed. It is especially remarkable on account of the suddenness of its appearance on the elder, and on account of its rapid increase. Its profusion in 1869 exceeded that of every preceding year in which I have observed it. It sometimes occurs with a pale green hue, very convex, and with nectaries not more than half the usual length. Two variations of its structure are here briefly mentioned. *First.*—Oval, bluish green. Antennæ less than half the length of the body. Nectaries comparatively short. Legs rather short. *Second.*—Triangular, widening from the head to the tip of the abdomen, which is almost truncated. The larva of an Agromyza sometimes devours A. Sambuci, and may be the same species that is much more destructive to A. Symphiti.

A. Laburni (S. S. 1298).—It generally looks very different from A. Rumicis, but the gradations of size and colour in the dark-coloured individuals of this genus are very numerous. In 1869 it appeared in excessive numbers. *Apterous female.*—Black, uniformly covered with white tomentum. Antennæ white, black at the base and towards the tips. Nectaries about twice the length of the tail. Legs white; femora black, white at the base; tarsi and tips of tibiæ black.

A. Papaveris (S. S. 1298).—A distinct difference should have a definite name, whether it be termed a species or a variety, but there is no determinate difference between A. Papaveris and A. Rumicis, and I believe that many so-called species and A. Rumicis will be found to have a common annual origin.

A. Rumicis (S. S. 1298).—An Aphis that occurs on the Guelder rose (*Viburnum Opulus*), in July, is quite distinct from A. Viburni and may be referred to this species, and the following description refers to the apterous female:—Dark green; disk rather paler. Antennæ white, more than half the length of the body, black at the base and for half the length from the tips. Nectaries a little longer than the tail, about one-tenth of the length of the body. Legs white; femora except the base, tarsi and tips of tibiæ black. Length $\frac{1}{6}$ line.

The following description refers to an Aphis that feeds on the leaves of the vegetable marrow, and is probably a variety of A. Rumicis:—July. *Apterous oviparous female.*—Oval, dull, rather dark green, mottled with paler green, one-third of a line in length. Antennæ pale green, a little more than half the length of the body. Nectaries black, about one-sixth of the body. Tail short. Legs pale green, rather short; tips of the tibiæ and of the tarsi black. September.—Most of the Aphides black; some green, mottled with darker hue; some pale green or pale yellow, with black nectaries, which are shorter than those of the normal form; their bodies also are more globose. The offspring of the last-mentioned variety are generally but not always dingy, and unlike it in colour. In October it is much more numerous, and of all colours from pale green or yellow; the young are often reddish green. The winged females have a black offspring. Towards the end of October nearly all the Aphides were dark green; a few were pale green, and the winged male paired with the latter. In November all were dark green. In August some occurred of a dark green colour, with transverse white streaks on each side of the body, and with black nectaries.

A. Genistæ (S. S. 1298).—I believe that this and A. Laburni are identical, though the latter is more shining, especially in the disk of the body. A much smaller Aphis that dwells on the furze may be termed A. Ulicis. It is sometimes like A. Laburni in colour, sometimes like A. Rumicis.

A. Euphorbiæ (S. S. 1298).—The Aphis that occurs on the Spurge in England seems to be a variety of A. Rumicis. The apterous female is black and dull. Antennæ white, black towards the tips. Legs white; tarsi black. The nectaries are shorter than those of A. Laburni and of A. Genistæ, and it does not equal the former in size.

A. terricola (S. S. 1299).—This species and A. terricola described by me live under ground in the apterous state. The latter species feeds on the root of the parsnip, and it occurs at the depth of one foot beneath the surface of the ground, to which it crawls when it is about to assume the winged state.

Siphocoryne Fœniculi (S. S. 1300).—It abounds on fennel in gardens, and is smaller than S. Capreæ, which it much resembles, and these two species may constitute a new genus, being very different in structure from S. Xylostei, the type of Siphocoryne.

Myzocallis Quercus (S. S. 1300).—This species appeared in unusual abundance during the summer of 1869. It is one of the few species of Aphididæ that I observed in the Channel Isles and in the Isle of Man. The genus Myzocallis should be restricted to M. Quercus, M. Quercea and M. Coryli. M. Ononidis is the type of a new genus, which I have named Therioaphis.

Chaitophorus salicivora (S. S. 1300).—The winged form of this species occurs in Italy, but I have never found it in this country. It chiefly abounds in the autumn, and varies in colour, being pale yellow or pale green, with brighter marks. The male and the oviparous female appear in October; the former is hardly more than one-fourth of the size of the latter, and is distinguished by a stripe of brown and black streaks. It is very different in structure from C. Aceris, which is the type of Chaitophorus, and will form a new genus, which I have named Tranaphis.

Chaitophorus Aceris (S. S. 1300).—C. Acericola is probably an especially southern form of C. Aceris. Some examples of it occurred in a year that was very favourable to the development of Aphididæ. At Interlacken, in Switzerland, it was generally prevalent to the exclusion of C. Aceris. The latter is remarkable on account of the widely different forms which it assumes, and also on account of the suspension of growth in the young of the third generation. The normal form appears in the early part of the year and also in July, and with it in the latter month I have observed on the same leaf the little flat form with laminæ round the abdomen. The variations of this species are noticed in the 'Zoological Record' for 1867, page 482, and I believe that Aphis perforatus, *Signoret*, referred to in the same work (p. 483) is one of the modifications of C. Aceris.

Chaitophorus Populi (S. S. 1301).—I have proposed the generic name Arctaphis for this species, which differs much from C. Aceris in structure.

Pterocallis Alni (S. S. 1301).—It is of frequent occurrence in the Isle of Man. P. Tiliæ is the type of Koch's genus Callipterus, which, with Myzocallis, Pterocallis, Therioaphis and Agrioaphis, forms a group in the Aphidina. Aphis Myricæ, *Kaltenbach*, is the type of my genus Agrioaphis. In addition to C. Tiliæ the lime is infested by the following insects. The galls on the twigs of the lime (formed by Cecidomyia Tiliæ) and the mites that infest the leaves are very variable in their appearance. The mites are Tetranychus socius (*Koch*, *Acariden*, &c., 17, 16; Trombidium socium, *Hermann*, *Mém. Apt.* 43, 26, pl. 2, f. 13), and T. tiliarum (*Koch*, *Acariden*, 17, 13; Trombidium tiliarum, *Hermann*, *Mém. Apt.* 42, 25, pl. 2, f. 12). The former is wholly yellow; the latter is very pale yellow, pale green along each side and with some black marks. They are nearly allied to the mite that infests the leaves of the currant.*

Trama and *Paracletus* (S. S. 1301).—These two genera are composed of subterranean species, and may be placed more naturally with the Rhizobinæ.

Sipha Glyceriæ (S S. 1328).—This is the type of the genus Sipha and has been hitherto included in Atheroides, *Haliday*. A. serrulatus is the type of the latter, and both genera should be transferred from the Lachninæ to the Aphidinæ.

Lachnus Quercus (S. S. 1329).—This is the type of my genus Stomaphis. Unlike most species of Aphididæ it is very limited in numbers and in the spots where it occurs. It has been observed, though rarely, in Surrey, Kent, Essex and Middlesex, and I have found it on "Turpin's Oak," near Finchley. It does not seem to be attacked by parasites, and it lives securely in the deep recesses of the oak bark, where its long rostrum, which it can extend or retract, enables it to feed on the sap. It is thus always provided with food except in the winter, and, unlike the migratory Aphididæ, does not need a new abode, and accordingly very seldom assumes the winged state. The latter form appears in spring, and, like the male, has no long rostrum, and the migration at this early period allows time for the settlement in a new habitation before the development of the oviparous generation when the wingless male also appears.

Lachnus Piceæ, Panz.—It is less regular in its appearance than the other English Lachni that feed on the fir tribe, and occurs only now and then near London. It is especially an arctic species and has been taken very far north in the polar regions. I have found it on the Grimsel, and I observed many specimens of it on the Mer de Glace. It is the Dryobius riparius of Snellen van Vollenhoven.

Callipterus Juglandis (S. S. 1329).—The genus Callipterus may be restricted to C. Tiliæ before mentioned, and the two species included in it by Passerini belong to two widely different genera; the first is one of the Lachninæ, the second one of the Aphidinæ. C. Juglandis, for which I propose the generic name Callaphis, lives on the upper surface of the leaf in masses along the midrib. Like the genus Cladobius it seems to connect the Lachninæ with the Aphidinæ. C. Juglandicola, which I have named Chromaphis peglandicola live scattered on the under surface of the leaf like the species of Myzocallis.

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* Trombidium telarium, *Hermann*, *M. A.* 40, 24, pl. 2, f. 15. Tetranychus telarius, *Koch*, *Acariden*, 17, 12.

Pterochlorus (S. S. 1329).—This genus follows Stomaphis and is Koch's Dryobius, and the latter name has the precedence. There are only two species known, D. roboris and D. longipes, the former a native of North Europe and the latter of South Europe. The slight difference between them may have been the effect of climate.

Phyllaphis Fagi (S. S. 1329).—The genus of which it is the only representative should be removed from the Lachninæ. The latter may be generally separated from the Aphidinæ by the greater length of the rostrum in proportion to the body, a character which also distinguishes the early age of the Aphidina from their final state. Phyllaphis may perhaps be associated with Drepanosiphum, Euceraphis and Monaphis as a group of Aphidinæ.

Euceraphis, Walk. Type A. Betulæ, *Linn.*—Aphis punctipennis (*Zetterstedt, Ins. Lapp.* i. 2, 311) belongs to this genus. It feeds on the birch and on the alder, and inhabits Lapland and Greenland. I have found it on the alder at Chamouni.

Monaphis, Walk. Type A. antennata, *Kaltenbach*. This genus is most allied to Euceraphis, but its peculiar structure sufficiently distinguishes it. The scarcity of its occurrence and its solitary habits are in remarkable contrast to the generality of the Aphididæ.

Schizoneura laniyera (S. S. 1330).—It is generally limited to the trunk and branches of apple-trees, but it sometimes occurs in abundance on the young shoots. It is the American blight about which much has been written and for which many remedies have been proposed.

Pemphigus (S. S. 1330).—Passerini describes many new species of this genus and distinguishes them by the difference in the length of the joints of the antennæ. In the Aphidinæ this character is occasionally variable in individuals of one species.

Vacuna dryophila (S. S. 1332).—Thelaxes has the right of priority as a generic name for this species, and the genus Vacuna may be restricted to V. Alni. V. dryophila appeared more abundantly than usual in 1869 near London, and I also observed it in the Isle of Man.

Vacuna Alni (S. S. 1332).—Until I saw Passerini's work I was not aware that this species fed on the alder as well as on the birch. I have since found it in abundance on the alder at Chamouni, but in England I have only observed it on the birch. It is the Aphis Alni of Schrank, the Vacuna Betulæ of Kaltenbach, and the Glyphina Betulæ of Koch.

Chermes Abietis (S. S. 1333).—The winged form is developed in the middle of August, and is then abundant on the spruce fir. The natural history of the species of this genus is very interesting and has been only slightly noticed in English publications.

FRANCIS WALKER.

Elm Hall, Wanstead, Essex.

The Nest of the Crocodile. By the Rev. BANCROFT BOAKE, Vice-President of the Royal Asiatic Society.

[The following paper appears in the Journal of the Ceylon Branch of the Royal Asiatic Society. The information is highly interesting, and if any of my readers who have been in India can make any addition to the information it contains I shall be much obliged.—*Edward Newman.*]

THE favourite haunts of crocodiles being but seldom visited, in consequence of the insalubrity of the localities in which they are generally to be found, and of the dangerous character of their inhabitants, the habits of these animals are very imperfectly known. The following account of two nests, which were recently found within a few miles of Colombo, may therefore be interesting to naturalists.

The first of these nests was discovered by Mr. Symonds, of the Survey Department, who found it to contain about one hundred and fifty eggs, which he removed, not without considerable risk, having been repeatedly charged by the old crocodile who was guarding them.

My curiosity having been excited by the description which I received of the nest from Mr. Symonds, I went to examine it myself. I found it amongst the bushes on the swampy bank of the Bolgodde lake, at a distance of a few feet from the water.

The nest itself consisted of wet vegetable matter mixed with mud, and was raised to the height of between three and four feet, presenting in shape very much the appearance of a small conical haycock, but in colour and consistency that of a heap of dung. Round the base of the cone was a circular trench more than three feet broad, and about two feet deep, in which the old crocodile was wont to wallow while watching her nest. The circle inclosed by this trench, the whole of which was covered by the base of the nest, was between six and seven feet in diameter.

I am not aware that these conical nests have been previously noticed.

The eggs are placed at a height of at least two feet above the surface of the water; and, although the nests in Ceylon are principally composed of aquatic weeds in a wet state, which might be expected to give out considerable heat in fermenting, yet I do not believe that any artificial heat is required to hatch the eggs, because several eggs, which were procured from the Bolgodde nests, were hatched in my house, being merely deposited in earth which was kept damp and exposed to the rays of the sun.

While examining the nest which had been discovered by Mr. Symonds, we were told by some natives who accompanied us that there was another nest, within a mile or two of the spot, which had not yet been disturbed.

On visiting this second nest, we found it in all respects very like the first, except that it was not so large, and that, besides the trench which surrounded it, there were one or two holes in the swamp in which the natives said that the old crocodile was accustomed to lie.

Warned by the narrow escape which Mr. Symonds had when examining the first nest, we approached very cautiously, expecting an attack every moment; and when we were all assembled on the edge of the trench surrounding the nest, we hesitated to cross it, because it was when he was in the act of stepping across the trench that Mr. Symonds was first attacked by the other crocodile, which raised its formidable jaws directly beneath him, and would no doubt have effectually put a stop to his proceedings, had he not promptly discharged the contents of his fowling-piece down her throat. This shot was not, however, fatal; for Mr. Symonds was subsequently charged twice by, as he believes, the same crocodile. On finding, however, that no crocodile appeared, our confidence returned; and at length one of our number ventured to approach near enough to remove the top of the nest, and to take away the eggs, of which he procured twenty-five.

On my expressing astonishment at the pacific conduct of the parent crocodile, and suggesting that it was probably absent in pursuit of food, the natives who were with us expressed their conviction that it was at that moment in the trench, but that it was of a different *caste* from the first. Further inquiries have satisfied me that this belief in the existence of two different species, or, as the natives call them, *castes*, of crocodiles, is universal in the country; and Dr. J. Anderson, of the Indian Museum, Calcutta, informs me that a similar belief prevails in Bengal respecting the mugger, which closely resembles the crocodile of Ceylon, if it be not identical with it. One *caste* is said to confine itself to a fish diet, while the other attacks human beings.

The former, called by the Sinhalese 'Elle Kimbola,' or gray crocodile, grows to a larger size than the more savage species, and is said to be that which is found about Kornegalle. As I have two thriving specimens, hatched from the eggs of the crocodile which attacked Mr.

Symonds, and am promised one of the progeny of that which submitted so quietly to the plundering of its nest in my presence, I hope that I shall be able to ascertain, by the aid of some eminent English naturalist, whether they belong to the same or to two different species. At present they present no difference in appearance that an unscientific eye can detect.

I may mention that there is some difficulty in bringing up young crocodiles by hand, as they obstinately refuse every kind of food that I have ever presented to them. One, which was brought to me some years ago, died of inanition, although, for a week or ten days that it was in my possession, I constantly tempted it with both flesh and fish. Those which I now have I feed by forcing bits of raw meat down their throats with a stick, two or three times a week. Under this treatment they seem to thrive, having about doubled in size since they left the egg; but the operation is not a pleasant one, and requires some dexterity, as their teeth are exceedingly sharp, and they lose no opportunity of turning upon the hand that feeds them.

Extracts from a Memoir intituled 'A Monograph of the Alcidæ.'

By ELLIOT COUES, A.M., M.D.

[This admirable memoir was published in the 'Proceedings of the Academy of Natural Sciences of Philadelphia' in 1868, more than a year ago, but its interest is enduring, and as very few in this country ever see the works in question, I am confident that the extracts I am about to make will be acceptable to the readers of the 'Zoologist.' The first section of the memoir is confined entirely to authorities, I therefore commence with the second.—*Edward Newman.*]

OF THE CHARACTERS OF THE FAMILY, AND ITS SUBDIVISIONS.

THE auks form a very natural family of birds, distinguished by marked and unmistakable characters from any other. With a single exception,* there is no bird found to present in any notable degree a leaning towards the peculiarities of the Alcidæ; and the members of the family, without exception, preserve intact those characters which define the group so technically, showing in no single instance a tendency to aberration. The rigidness with which it is possible to circumscribe the Alcidæ is in the highest degree satisfactory, in a class of animals in which the recognition and definition of subordinate groups is peculiarly difficult.

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* The genus Pelecanoides, of the Halodrominæ (Procellariidæ), in all details of external form, except those of the bill, is essentially like Mergulus.

The natural place of the family in our ornithotaxis appears as definite as the characters which separate its forms from other birds. By common consent, the Alcidæ are regarded as next to the lôwest of birds. The degradation of the type or ideal bird which the auks represent is only carried further in one family—the Spheniscidæ. From the latter, which is at the bottom of the scale, we ascend one step to Alcidæ; another brings us to the Colymbidæ and Podicipidæ. These four families constitute the order Pygopodes, or the Brachypterous Natatores. The position occupied by the auks in this order is so evident as not to admit of question.

It is only necessary to allude to the wings of the Spheniscidæ, without dwelling upon the point, to separate this family from the auks. The tetradactylous feet of the other two families distinguish them with equal facility. Auks are brachypterous, brachyurous, tridactylous natatores, with lateral nostrils. This expression is a perfect diagnosis.

The auks are confined to the northern hemisphere. Some representatives have been found as far north as explorers have penetrated. The great majority live in more temperate latitudes. A more or less complete migration takes place with most species, which stray southward, sometimes to a considerable distance, in the autumn, and return north again to breed in the spring. A few species appear nearly stationary. The most southern recorded habitat of any member of the family is about latitude 21° N., on the Pacific coast of North America, but this is rather exceptional. The species are very unequally divided between the two oceans. The Atlantic has but few representatives compared with the Pacific. On the northern coasts of the latter the family reaches its highest development: the greatest number of species, of the most diversified forms, are found there, though the number of individuals of any species does not surpass that of several Atlantic species. Comparatively few species are common to both oceans. All the members of the family are exclusively marine.* They are decidedly gregarious, particularly in the breeding season, when some species congregate in countless numbers. Usually one, often two, rarely if ever three eggs are laid, either upon the bare rock or ground, or in crevices between or under rocks, or in burrows excavated for the purpose. Auks are all altrices, and are believed to be chiefly monogamous. The young are at first covered with long soft woolly down; rarely stiffish hairs appear on some parts. The moult is double. The young of the year usually differ from the adults; the latter usually differ in their summer and winter plumages. A very prevalent feature is the possession of crests or plumes, or elongated feathers of a peculiar shape on the sides of the head. All the species walk badly; some scarcely walk at all. The position of the legs with reference to the axis of the body necessitates an upright position when standing. The birds appear to rest on their rumps, with the feet extended horizontally before them, most of the tarsus touching the ground. The puffins, however, and a few others, stand well on their feet. All the species but one fly well, with rapid vigorous motion of the wings, in a straight, firm, well-sustained course. All progress on or under the water with the utmost facility. They are very silent birds; the voice is rough and harsh; the notes are monotoned. They feed exclusively upon animal substances procured from the water.

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* Uria grylle is found on the southern shores of Hudson's Bay; but this fact can hardly furnish an exception to the statement.

The uniformity of structure which obtains throughout the family has already been mentioned: the following paragraphs describe this structure in a general way, so far as the details of external form are concerned: *

The general form is stout, compact, and heavy. The body is depressed, flattened underneath. The neck is short and thick. The head is large and heavy, usually oval in shape, more or less flattened laterally, more or less drawn out anteriorly, and sloping gradually on all sides to the bill, but sometimes ending abruptly. The plumage about the head is very soft, dense, and short, except those feathers which constitute the peculiar crest or lateral plumes already mentioned. That of the upper parts is very closely imbricated; that of the lower is very thick, compact, elastic and otherwise eminently fitted to resist the action of water.†

The bill, though constantly preserving certain characteristics, varies to a remarkable degree in the details of its shape. The broad statement may be made, that no two species ‡ of the family have bills identical in shape. So unending is the variation in the bill, that in

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* The writer hopes to bring forward, at some future time, a memoir on the anatomy of the family.

† Cf. Nitzsch's Pterylography for pterylosis of Utamania torda.

‡ Is Uria ringvia specifically distinct from U. troile?

some cases great differences in shape seem of scarcely more than specific consequence, as is especially the case in the genus Simorhynchus. The bill in the great majority of species is more or less compressed, sometimes excessively so; it is frequently, however, nearly as wide as high at the base, and more or less subulate. The contour of the bill in many instances deviates from an ordinary standard so much that the shape may almost be called monstrous. A striking peculiarity of the bill in several genera is the presence of supernumerary elements or accessory pieces, taking the form of salient protuberances. These are usually developed on the culmen; in one instance on the gonys; in one at the angle of the rictus; in several along the feathered base of the bill. Besides these appendages, there are often found grooves and ridges on the sides of one or both mandibles. The culmen is always more or less convex; in one instance it is bi-convex. The tomial edges of the mandibles are more or less sinuate: sometimes nearly straight; usually decurved at the tip, and slightly notched; in one instance recurved. The rictus is ample.* The mandibular rami approach each other with a very narrow angle, and soon join, producing a long gonys, which is usually nearly straight. One genus has a very convex gonys; in two others the gonys runs the whole length of the bill, there being no mandibular rami proper. The bill is entirely horny, except in two species, in which a soft membrane overlaps the base of the upper mandible; and in a third, where a peculiar knob is not strictly corneous.

The nostrils are basal, lateral, marginal, impervious; usually linear, or narrowly oval; in a few instances placed further from the commissural edge of the upper mandible, and nearly circular. The nasal fossæ are usually very evident; are sometimes hidden by feathers; at others are wholly wanting. The extension of the feathers into the nasal fossæ varies in degree, when it occurs. In just about half the species the nostrils are naked; these usually have no true nasal fossæ. In the other half fossæ occur; entirely obtected by feathers in three genera; partially covered in the rest. The significance of these features will receive further attention below.

The wings are short. In no instance do they, when folded, reach to the end of the tail. In one species they are so undeveloped in their

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* In two genera, in which the excessive compression of the bill produces a very constricted rictus, its amplification is provided for by means of a dilatable skin at the angle of the mouth.

terminal segments* that the power of flight is abrogated. The first primary is always longest; the rest rapidly and regularly graduated; all taper to a sufficiently fine point. The secondaries are very short, and broadly rounded. The primary coverts are very long, reaching much more than half-way from the carpus to the end of the first primary. The first row of secondary coverts reach nearly to the end of the secondaries. The under wing-coverts are very long. The axillars are short or wanting. The wing as a whole is convex above, concave below, narrow, sharp, stiff, somewhat falcate. These points of structure are constant throughout the family.

The tail is very short; its length is contained, on an average, about three times in the length of wing from the carpal joint. It is usually slightly rounded, sometimes nearly square, in a few instances pointed; in a few more the central rectrices are slightly shorter than the next pair. The individual feathers are usually very obtuse at the end. Both sets of coverts are long; the inferior usually reach nearly or quite to the end of the tail.

The feet are small, and placed far back, as has been said. The thighs are contained within the general skin of the body. The legs are feathered nearly or quite to the tibio-tarsal joint. The tarsus is short, sometimes excessively abbreviated, rarely equal to the middle toe without its claw, never (?†) longer. It is usually much compressed, is sometimes almost as sharp as that of Colymbus, is frequently nearly as broad laterally as antero-posteriorly. Its covering varies with different genera. It is usually reticulate behind and laterally, with a row of scutellæ in front, which rarely, however, if ever, extend its whole length. In some genera it is entirely reticulate; in others, the scutellation extends on one or both sides. The tarsal envelope varies so much that it is not available as a character for subdivisions higher than generic. The toes are very long; the outer and middle always of nearly the same length; the inner shorter, its claw just reaching the base of the middle claw. There is no hind toe. Dissection reveals the rudiment of a hallux, which, however, is never developed sufficiently to make even a well-marked prominence. The webbing of the toes is complete. The claws are all moderately arched, compressed and acute; the inner edge of the middle is more or less dilated; the middle is always the largest, except in two genera, which present the peculiarity of having a very large semi-circular inner lateral claw, which, moreover, lies horizontally instead of vertically.

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* *Cf.* Mr. A. Newton's article in the 'Ibis' for October, 1862. As there stated, the humerus of Alca impennis is of normal size; the antibrachium, carpus and metacarpus, and their quills, are shortened.

† Brachyrhamphus brachypterus is said by Brandt to have the tarsus longer than the middle toe.

That rigid adherence to the type of structure just described which all the species maintain, while facilitating the recognition of the family as a family, is a serious obstacle in the way of defining its subdivisions with precision. With no very abrupt transition from one form to another, and without any very marked modification of general features, the minor groups seem to be formed mainly by the varying combination of the few differences in structure which obtain in the family. The assemblage of characters, rather than the presence or absence of particular features, in most cases determines the genera; and no two species are absolutely alike in all points of form.

> ——— "Facies non omnibus una,
> Nec diversa tamen, qualis decet esse sororum."

In one of the ablest papers that has appeared upon this subject, Professor Brandt divides the Alcidæ into two subfamilies—those with feathered and those with naked nostrils. In this arrangement the guillemots stand next to the typical auk (A. torda). Viewed from any other standpoint the two forms appear to represent the extremes of structure in the family; particularly in regard to the bill, cultriform in one, subulate in the other. The two types are by most authors placed at opposite ends of the generic chain, and separated by all the Starikis. Attentive consideration of all the bearings of the case may very likely result in the opinion, held by the present writer, that the difference between the views of Professor Brandt and other writers is rather apparent than real. It should be borne in mind that the Alcidæ are a family very rigidly circumscribed, and one showing no tendency to aberration, or to connect itself ultimately with the families standing next to it on either side. Whether as cause or consequence of this, the fact is indisputable, that the genera of Alcidæ are not strung along in a chain whose ends seem, as it were, to be linked with the genera of other families: they tend, on the contrary, to aggregation in a circle about a common centre. We may take any genus,—it matters not which,—we shall find its closest ally to the right and to the left; and the circuit shall be complete when all the genera have been considered. To illustrate this point, Prof. Brandt, like all other writers, takes the typical Alca as his starting point.

With the feathering of the nostrils as a fundamental feature, Uria and its subdivisions must come next, then Brachyrhamphus; this leading through Mergulus into the true Phaleridines, by means of Ptychoramphus. Beginning with those Phaleridines with the simplest bills, he progresses to those with more complex bills, ending with Ombria, which last, through Cerorhina, conducts to Fratercula, which ends the series. There is nothing strained or forced in this; the succession of the genera is perfectly natural. But it so happens that Fratercula is as closely, or even more closely, allied to Alca proper than Uria is. We cannot disturb in any essential degree the generic series of Prof. Brandt, but we could with entire propriety go directly from Alca to Fratercula, and thence backwards over the same track, ending with Uria, which would then be at the opposite extreme of the series. It is asserted, without fear of reasonable contradiction, that to begin anywhere in this natural series of genera, and progress through it, is to be brought back to the starting point.

It is not, perhaps, possible to divide this generic circle without the exercise of some arbitrary jurisdiction. If there be included in it two or more subfamilies capable of precise definition, the fact has eluded the writer's research. There are, however, in the series two places where a dividing line may be drawn. Prof. Brandt drew but one, relying upon the single character which he found to apply so well, albeit it may be an arbitrary one. Other writers have made likewise but two subfamilies, differently framed, however; the Alcinæ, including the true auks, together with the Phaleridine forms, united because of their short, stout, high bills; and the Urinæ, separated on the ground of their long, slender, subulate bills. Others again, particularly Mr. G. R. Gray and Prince Bonaparte, have drawn two lines, recognizing three subfamilies; and this course seems to be the one that holds closest to nature, provided the family be really susceptible of subdivisions higher than generic. By simply reducing Prof. Brandt's fundamental character to the level of one drawn from the general structure of the bill, three subfamilies stand forth with tolerable distinctness. The Alcinæ have feathered nostrils and cultriform bills; the Phaleridinæ naked nostrils and cultriform bills; the Urinæ feathered nostrils and subulate bills. This certainly appears to be a distinction with a difference, and will be so held in the present paper.

The arrangement of the Alcidæ here submitted is a modification of Prof. Brandt's, providing for the recognition of three in place of two subfamilies. In this particular it is substantially the same as Mr. Gray's, but the sequence of the genera is entirely different, and is nearly that of the first-mentioned author. Beginning with typical Alca it passes to Fratercula, and ends with Lomvia, instead of passing to Lomvia and ending with Fratercula. But in either case the collocation of the genera is essentially the same. It is believed that this sequence of genera cannot be broken in upon to any considerable degree, without the rupture of a natural series as a consequence.

DESCRIPTIONS OF GENERA AND SPECIES.

Subfamily ALCINÆ.—ALCA, *Linnæus*.

Size largest in the family. Form heavy, compact, robust. Head large, ovate, produced forwards. Neck moderately long, thick. Wings morphologically perfect, teleologically rudimental, not admitting of flight, in length from carpal joint to end of longest primary scarcely twice as long as tail; when folded not reaching the tail. Tail short, pointed. Legs short and stout. Webs broad and full. Tarsi compressed; their anterior ridge and superior surfaces of toes scutellate, lateral and posterior aspects reticulate, the plates on the latter very small. Tibiæ feathered nearly to the joint. Bill about as long as the head, large, strong, very deep, exceedingly compressed. Upper mandible with culmen about straight for half its length, then regularly convex, tip obtuse, declinate, scarcely overhanging; a deep groove on its side at base, parallel with the outline of feathers; its side then perfectly smooth for a space, then deeply impressed with six to ten oblique curved sulci. Gape very large, running far back; line of commissure nearly following that of culmen. Eminentia symphysis slight; gonys nearly straight. Lower mandible two-thirds as deep as upper, its sides impressed with six to ten straight, vertical sulci. Feathers about base of mandibles short, very compact, extending downwards from base of culmen, a little forwards, to commissural edge of upper mandible; reaching much further on sides of lower mandible; wholly covering the moderately long, very narrowly linear, impervious nostrils, which are situated just above the commissure.

It is unnecessary to compare this genus with any other. Utamania, most closely allied, is at once distinguished by its teleologically perfect wings, though nearly identical with Alca in other points of structure. The only known representative of the genus is remarkable, both for its large size and for not possessing the power of flight, in consequence of which it may be said to represent, in the Northern Hemisphere, the numerous penguins of the Southern. By many ornithologists it is believed to have very recently become nearly or quite extinct.

Rigid adherence to the law of priority would necessitate the use of a different name for this genus. "Alca" was first applied by Linnæus, in 1744, to the genus of which the bird now called Fratercula or Mormon arcticus is typical; and even as used by Linnæus in 1758 it has torda as its recognized type, according to that rule which regards the species first mentioned as type, when none is otherwise indicated; so that it cannot, with strict propriety, be used at all in this connection. But the name has become so firmly established by common consent and long usage that it would be ruthless, as well as profitless, to attempt its supercedure by Chenalopex of Moehring, 1752, particularly as this latter word has come into extensive employ for an Anserine genus. The genus Alca, as framed by Linnæus in 1758, included both torda and impennis; and when restricted, by the generic separation of these two types, there seems no good reason why the first mentioned should be regarded as more peculiarly typical of the genus than the last. Should Alca be reserved for Fratercula artica, or for Utamania torda, it will be apparent that numerous unwarrantable innovations necessarily follow, while its employ in connection with impennis entails no such consequences.

Alca impennis, Linn.—Description (from the specimen in the Philadelphia Academy):—The white spot between the eye and bill is ovate in shape, its upper border a little straightened, its small end towards, but not quite reaching, the bill, its large end extending to, but not around, the eye; the width of the black space between it and its fellow is rather more than half an inch. The back is dusky black; other dark-coloured parts with a good deal of clear brown, especially on the head. The under parts, including the tail-coverts, are white, this colour running far up on the front of the neck in a narrowly acute angle. The under wing-coverts are ashy gray. The secondaries are narrowly but distinctly tipped with white. The bill is deep black, its sulci dull white. The feet are dark, their precise colour at present undefinable.

Dimensions:—"Length about 30 inches;" wing 5·75; tail about 3·00; bill along gape 4·25; chord of culmen 3·15; greatest width of bill ·66; greatest depth of upper mandible 1·00, of lower ·66; tarsus 1·66; middle toe and claw 3·25; outer 3·00; inner 2·25.

The occurrence of this species on the coast of North America has not been authenticated of late years. Perhaps the last instance on record is that given by Audubon on page 316 of the fourth volume of 'Ornithological Biography.' "The only authentic account of the occurrence of this bird on our coast that I possess was obtained from Mr. Henry Havell, brother of my engraver, who, when on his passage from New York to England, hooked a great auk on the banks of Newfoundland, in extremely boisterous weather." This specimen was not preserved. "When I was in Labrador," continues Audubon, "many of the fishermen assured me that the 'penguin,' as they name this bird, breeds on a low rocky island to the south-east of Newfoundland." The present writer received similar assurances when in Labrador in 1860—the place designated being the "Funks." Audubon also states that "an old gunner residing on Chelsea Beach, near Boston, told me that he well remembered the time when the penguins were plentiful about Nahant and some other islands in the bay."

Two specimens only are known to exist in any American museum. One is in the Philadelphia Academy; its history is uncertain. The other, in the Vassar College, at Poughkeepsie, New York, is the original of Audubon's plate and description, as stated in the following note from Prof. Sanborn Tenny, favoured in reply to questions regarding it: "The great auk, presented to Vassar College by J. P. Giraud, jun., Esq., is in a perfect state of preservation. This specimen is the one from which Audubon made his drawing, and it was presented to Giraud by Audubon himself. Neither Giraud nor myself has further knowledge of it than what is contained in Audubon's works."

Concerning Mr. Audubon's specimen, Mr. Cassin remarks (B. N. A. p. 901), that it was "obtained by him (Mr. A.) on the banks of Newfoundland;" upon which statement Mr. A. Newton (Ibis, Oct. 1862) observes, "In 1857 I was assured by Mr. Bell, the well-known taxidermist at New York, who knew Mr. Audubon intimately, that he never possessed but one specimen of this bird; and if we turn to Prof. Macgillivray's 'History of British Birds' (vol. v. p. 359), we find him saying that he never saw but two examples of the species, one in the British Museum, and 'the other belonging to Mr. Audubon, and *procured by him in London*.'" This serves to throw some little light on the history of the specimen now in the Vassar College, Poughkeepsie, New York.

In the 'Annals and Magazine of Natural History' for 1864, p. 235, is given, by Mr. Robert Champley, "a list of the present possessors of the birds, skeletons and eggs of Alca impennis;" this gentleman being cognizant of the existence of twenty-seven skins, six skeletons and fifty-three eggs. Dr. G. Hartlaub (Bericht üb. d. Leist. in d. Naturg. der Vögel for 1864) remarks upon this enumeration: "Es ist dieses Verzeichniss indessen sehr unvollständig. So z. B. geschicht des schönen Exemplares der Bremer Sammlung so wie des prachtvollen Ei's im Museum zu Oldenbung keine Erwähnung." Mr. A. Newton, on the subject of existing specimens, has (l. c.) the following: "If all the stories we received can be credited, the whole number would reach eighty-seven. I should imagine sixty to be about the real amount;" and again: "It is pretty evident that most of the specimens of the great auk and its eggs which now exist in collections were obtained from Eldey, between the years 1830 and 1844.*

Two eggs are contained in the Philadelphia Academy's collection.

UTAMANIA, *Leach.*

Size moderate; form stout, compact, heavy; head moderate, anteriorly produced, neck thick. Wings of moderate length, but fully developed, admitting of flight, reaching when folded beyond base of tail; more than twice as long as tail from carpal joint to end of longest primary. Tail rather short, pointed, of somewhat stiffened, acuminate feathers, of which the central pair are elongated ~~and~~ tapering. Legs short, stout; tibiæ bare for a short space above joint; tarsi compressed, anteriorly with a single row of scutellæ, posteriorly and laterally finely reticulate, shorter than the middle toe. Toes long, outer nearly equal to middle, inner much shorter; interdigital membranes broad and full; claws short, stout, obtuse. Bill about as long as head, densely feathered for half its length; feathers on upper mandible extending beyond middle of commissure, nearly as far as those on lower mandible. Bill greatly compressed, its sides flat, with several transverse sulci, its culmen ridge regularly convex; tip of upper mandible declinate, rather acute; its base encircled by a prominent ridge; gonys about straight; commissure straight to tip, then suddenly deflected. Nostrils just above cutting edge of bill, in its feathered portion, just posterior to basal ridge, impervious, narrowly linear.

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* "Lists of these, which are in the main correct, though I know of a few that are omitted, have lately appeared in the 'Zoologist' for the present year [1862], pp. 7353 and 7386, and almost simultaneously in the 'Field' newspaper (Nos. 423 and 424, pp. 93, 114). Further remarks on them will be found in the former journal (pp. 7387 and 7438)."—*Newton, l. c.*

Comprising a single species, upon the varying plumages of which numerous nominal species were established by the earlier authors. The employ of the present name for the genus, instead of Alca of Linnæus, 1758, is perhaps defensible upon the grounds alluded to; although the reason for the non-acceptance by authors of Torda of Duméril as a generic designation is not apparent. It would be easy to find, among the synonyms of the species, a trivial name to replace Torda, should it become necessary to use this as a patronym.

Utamania torda (L.) Leach.—Habitat:—European and American coasts of the Atlantic, from the higher latitudes in summer, to the 40°, or thereabouts, in winter. Very abundant. Specimens in all the American museums, and most private collections. Breeds in great numbers on the islands in the Gulf of St. Lawrence, and on the coasts of Labrador and Newfoundland; in winter strays south to New Jersey. Arctic seas of both hemispheres. Rare, or accidental in the North Pacific. Japan! (Schlegel, Mus. Pays-Bas.)

Adult, in summer.—Iris bluish. Mouth chrome-yellow. Bill, feet and claws black; the former with a conspicuous curved vertical white line occupying the middle sulcus of both mandibles, continuous from one to the other. A straight, narrow, very conspicuous white line from eye to base of culmen, composed of a series of very short stiff setaceous feathers, sunk below the middle of the others. Secondaries narrowly but distinctly tipped with white. Head and neck all around, and entire upper parts black; this on the sides of the head, chin and throat lustreless, velvety, tinged with fuliginous or brownish; on the upper parts glossy and more intense in colour. Inner webs of primaries light brownish gray at base. Entire under parts from the throat, including under surfaces of wings, white.

Adult, in winter:—Upper parts lighter, duller, more brownish black; the white of the under parts extending to the bill, and on the sides of the head and neck, sometimes quite to the nape.

Young, first winter:—Similar to the preceding; smaller, the bill weaker, shorter, less elevated, less decurved at the tip, the culmen, rictus and gonys straighter, the sides of both mandibles smooth, except in the presence of one sulcus; bill brownish black, the sulcus white. Legs and feet reddish or brownish black.

Fledgelings:—Bill very small and slender; body clothed with smoky brown or black down, lighter, or tending more or less to grayish white below.

The white stripe from the eyes to the bill is very variable, though present in the great majority of individuals. It always exists in the adults in summer plumage, but is sometimes absent in specimens, apparently perfectly adult, in winter plumage. Its presence does not seem to be amenable to any very general or constant law: since it may be very evident in very young birds, not yet fully fledged, and again absent in apparently mature specimens, as just stated. In winter specimens it is frequently interrupted and irregular, wanting the sharpness of definition which it has in all cases of adult specimens in summer vesture.

Dimensions: Adult.—Length (average) 18·00, extent about 27·00, wing 7·75, tail 3·50, difference between outer and inner feathers 1·25; tarsus 1·25; middle toe and claw 2·00, outer toe the same, inner toe 1·40; chord of culmen 1·30, its curve 1·50; rictus 2·25; gonys ·75; nostrils to tip ·85; greatest depth of bill (just anterior to nostrils) ·90; greatest width of the corneous portion ·30. Young.—Length 15·00; extent 22·00; wing 7·00; tail 3·00; tarsus 1·00; chord of culmen 1·00; rictus 1·75; gonys ·60; greatest depth of bill ·60; greatest width ·20.

(To be continued.)

Cats killing Squirrels.—In the numbers of the 'Zoologist' for January and March, 1869 (S. S. 1057 and 1129) this question is discussed. It may not be amiss to mention that the fact of the domestic cat killing squirrels in India is of very frequent occurrence. The Indian species, the palm squirrel (*Sciurus Palmarum*), is somewhat smaller than the English one, but probably more active and vigilant: it nevertheless frequently falls a prey to the cat, to whom nothing seems to come amiss. I was once living in a house where it was considered necessary to keep a cat; but the animal soon gave up its legitimate calling, and took to living upon squirrels, which were more numerous than the rats, easier caught, and afforded doubtless better food. On several occasions I witnessed the cat in the act of "stalking" and taking the poor squirrel. These animals are to be found in considerable numbers in every suitable locality, and in some parts of India they actually infest the house—so much so that I have seen five or six caught of a morning in a circular wire rat-trap having three entrances. The cat, on the occasions referred to, would watch the squirrel in the act of feeding under a tree (one at a distance from the others, and sufficiently removed from buildings would be selected), and by dint of hiding behind tufts of grass and bushes, and taking advantage of the inequalities of the ground, would manage to get the tree between her and the squirrel, and then with a pounce would carry off the victim, to be devoured at leisure in the garden. I have frequently baulked the cat thus in the act of "stalking," and seen her renew her endeavours almost immediately. I could relate other instances in proof of the partiality cats have for squirrel's flesh, more particularly for their young.—*Andrew Anderson; 1, Union Place, Trinity, Edinburgh.*

The Beaver in Scotland.—Allow me to make an addition to the evidence on this subject collected by Mr. Brown, in the admirable paper reprinted in the January number of the 'Zoologist' (S. S. 1965). Prof. Cosmo Innis, in his work on 'Scotland in the Middle Ages,' observes that in the capitular for the rates of custom duties to be levied at the Scotch ports, believed to have been settled by King David I. (who reigned from 1124 to 1153), "It is not without interest that, in the enumeration of furs upon which duty was to be taken in exporting, along with the common skins of tod, whitrel, mertrick and cat, we have, specially mentioned in all the manuscripts, the skins of beaver and sable." (p. 236). What the "sable" may have been I do not know, the marten having already appeared under its Scotch name of "mertrick:" possibly the fur of the polecat may have been so called.—*Edward R. Alston; Stockbriggs, Lesmahagow, N.B., January* 7, 1870.

Large Badger in Somersetshire.—A male badger (*Meles vulgaris*) was shot near Crewkerne, Somersetshire, on the 8th of December, of the unusual weight of above thirty-two pounds. It was sent to the naturalist of this town, Mr. Shopland, to be stuffed, where I had the opportunity of seeing it. I regret not to be able to give its dimensions. The above is, as far as I remember, the heaviest specimen of its kind that has come under my notice.—*A. de Hügel; Florian, Torquay, December* 19, 1869.

Whale on the Coast of South Devon.—On Thursday the 18th of November, 1869, D. Middleton and R. Pratt, whilst whiting fishing about twelve miles off the land of this coast, perceived a large object approaching, submerging and showing itself on the surface at intervals. It passed them at only twenty yards' distance, and was evidently a whale, probably a rorqual. From the nose to the back fin the distance appeared about twenty feet; allowing therefore twenty to twenty-five feet from back fin to tail, it might have been from forty to fifty feet in length. Two others were reported to have been previously seen.—*J. C. Wilcocks; Budleigh Salterton.* (*From the 'Field'*).

Whales in the Firth of Forth and at Portsmouth.—The whales which have been lately stranded on our own shores, one at Longniddry in the Firth of Forth, another at Langstone Harbour, near Portsmouth, and others elsewhere, have given rise to a discussion which promises to become interesting. Mr. Flower holds to the Longniddry whale being either Balænoptera Musculus or B. Sibbaldii, while Professor Turner of Edinburgh, together with other eminent Scotch naturalists, incline to regard it as an undescribed species. There is, we are glad to learn, every reason to hope that the skeleton will be preserved, in which case the species will be finally set at rest.—'*Nature.*'

Iceland Falcon in Cornwall.—A fine young female of this variety of the jer falcon (*Falco islandicus*), in the immature state of plumage denoted by the dorsal feathers being bordered with white, with the under parts mottled with brown on a yellowish white ground, legs and feet of a pale greenish blue, was lately captured when entangled amongst sedges on some coarse ground in the parish of St. Merryn, near Padstow. It was kept alive for some time by Mr. J. Old, of Carnevas, in that parish, who sent the bird to be preserved by Mr. Vingoe. The ovary contained a bunch of eggs, the largest about the size of ordinary shot. The bird when set up was forwarded to Mr. Gould, when it also came under the observation of Prof. A. Newton, who both verified its value as the rarer variety than the Falco Grœnlandicus or

F. candicans. Mr. Gould retains the specimen to make a drawing of it. On comparing the relative sizes of the breast-bone of this and the common kite I was surprised to find that it was very nearly, if not quite, double the bulk.—*Edward Hearle Rodd; Penzance, January* 17, 1870.

Japanese or White's Thrush in Somersetshire.—I have to record the occurrence of the very rare Turdus Whitei of Yarrell at Hestercombe, near Taunton. On Friday, the 7th of January, I met Mr. Beadon, of Yatton, when out hunting: he told me his son had shot a bird he did not know, when out shooting a day or two before at Hestercombe, in mistake for a woodcock. Mr. Beadon afterwards kindly sent me the bird, or rather what remained of it (for it had been very much mauled by dogs and beaters), for identification, and with permission to keep it for my collection if I could make anything of it, which luckily, with the assistance of Mr. Bidgood, the Curator of the Museum at Taunton, I have been able to do. The bird agreed so closely with Yarrell's description that I think I need add no particulars, except that the legs and toes (scarcely faded at all when I first saw them) were yellowish brown instead of pale brown; the claws considerably paler than the legs and toes, but still tinged with yellowish brown.—*Cecil Smith; Lydeard House, Taunton.*

*Six Additions to a List of the Migratory and Wandering Birds of the County of Dublin.**—

Wood Lark. A very abundant winter visitant: it also breeds in the county. (Accidentally omitted in former list.)

Melodious Willow Wren. A specimen of this fine species has lately been exhibited in the Museum of the Royal Dublin Society, and bears the inscription, "Dunsinea, Co. Dublin. Donor, John G. Rathbarne, Esq."

Reed Wren. December, 1843. Kinahan, in the 'Zoologist' (Zool. 6957).

Tree Sparrow. Dalkey and Baldoyle. Scarcely known to any but the bird-catchers. Many of them have pointed it out in my collection: they mention it as having a puce-coloured head, a finch-like "twitter," and that it is much smaller and differently marked from the common sparrow. It is scarce, but they believe it to be resident.

European Whitewinged Crossbill. Occurred once to myself, as stated in a former number of the 'Zoologist.'

Longtailed Duck. A scarce winter wanderer. Thompson records it, and it has passed several times under my own observation. (Accidentally omitted in former list.)

This makes the number of species of birds, resident, migratory and wandering, of the County of Dublin, two hundred and twenty four. I shall feel greatly obliged to any person who will confirm any of the rare birds in this list, or add any species I may have omitted. I have hopes of being able to include the wood sandpiper amongst our wandering or perhaps migratory species; also the wood wren, which, though I can get no proof of its existence, I am convinced is a regular migrant, and that it is often passed over as the common willow wren. Numbers of rare birds occur in Ireland without any record being made of them other than in the reports of the local societies. Few readers of the 'Zoologist' will believe that both the blue thrush (*Turdus cyaneus*) and White's thrush (*T. Whitei*), and the ruddy shieldrake, have occurred within the last few years in Ireland, yet if a modern work on British birds were got up, in all probability these would be shorn from the laurels of Ireland, especially when we have no Thompson now living. The blue thrush was presented to the Royal Dublin Society by Mr. Brassington: it was killed on the 17th of November, 1866 (*vide* label attached), in Westmeath. White's thrush was shown me by Mr. Glennon, of Wicklow Street, Dublin, who stuffed it. The ruddy shieldrake was sent to Mr. Williams, of Dame Street, to stuff.—*H. Blake-Knox; Dalkey, December* 23, 1869.

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* Published in the 'Zoologist' for 1866 (S. S. 220, 300).

Black Redstart in the County of Dublin.—December 13. While driving past the Colamore to-day I had the pleasure of seeing a male black redstart, in full distinctive dress: it was in a field opposite Alma and Riva Cottages. It disported itself quite close to me while I remained, flying from every little eminence to the grass with that quick vagrant action so peculiar to these birds: there was also a sunny wall along the field, against the face of which it flew frequently, a habit so common to the species that I never saw one that did not do so. I am sorry to say that I was tempted to go for my gun: on my return the bird was still in the field, but showed great wariness and restlessness. I fired at a disadvantage, only wounding it, when it sought safety in an old wall, where I had to leave it. Frequently in company with it I saw other birds, but I think they were stonechats, but of this I am not sure, for I could not get near enough to distinguish them—at all events, they were not male birds. December 14. Saw a male black redstart in same field as yesterday: did not molest him: hope he may be the same bird: he seems all right. For the last twelve years I have met with the black redstart every second winter: this rule was never violated, except in 1867, and in that year I spent much of my time on the sea.—*Id.*

On the Plumage of the Black Redstart.—Has the black redstart a winter and a summer plumage? I say not. Dr. Bree, in his 'Birds of Europe,' is under the impression it has. I argue the fact that it has not two seasonal plumages, because birds shot by myself in December and January, not to speak of many seen in October and November, are similar to others from the Continent shot during the summer months, with the slight difference that the older the plumage the more the fringes or edges to the feathers wear off, which is common to all the Sylviadæ, finches, &c. The adult male black redstarts in winter (County Dublin specimens) agree with the plates and woodcuts in so many of our works on Natural History, and certainly never with S. Cairii of Dr. Bree. "This bird," writes Dr. Bree (vol. ii. p. 6), in reference to S. Cairii, "is exactly similar in plumage to the autumnal moult of the male S. Tithys, the black redstart of the British lists. It affords a good example of what is termed a permanent variety or race, because it has been found by careful examination that it never assumes the dark breeding plumage of the latter bird; I have thought it right therefore to give a figure and notice of it in this work, more particularly as the black redstart is a rare straggler in Britain, and not likely to be met with here in its moulting plumage." Dr. Bree here overlooks the fact that the black redstart is a *winter* migrant or wanderer, chiefly to Britain, and that if the winter plumage (I do not understand the term "moulting plumage") of the male bird is similar to that of S. Cairii, that would be the plumage in which British observers would more generally find it; in other words, that male would be similar to female. But as most of the male black redstarts that I have heard of or seen as British have been shot after the autumnal moult, and as all of them were in the full black redstart plumage, or the breeding plumage of Dr. Bree, I cannot for a moment think it has seasonal plumages. The young male after the autumnal moult is like the old male, but, as in all or most young birds the intensity of the colour is subdued or hid by the extravagant depth of the fringes of the feathers, but which shines forth as the fringe gradually wears away. I have never, even in young birds, found this fringe at all sufficient to hide the distinctive colouring of the male: the bulk of observation has been made on S. phœnicurus. I think M. Degland clearly shows there is no spring moult, and that S. Cairii breeds in the plumage of Cairii, and that S. Tithys does not change from the plumage of Cairii to that of Tithys in the spring: that observer, referring to S. Cairii, says, "This bird breeds in its autumn plumage, which it never changes at any period of the year. Every research which has been made in the spring to find a bird in intermediate plumage has been in vain. Now if S. Tithys had been found in spring in intermediate plumage,—that is, changing from the supposed winter plumage of Dr. Bree, which, bear in mind, is similar to S. Cairii, to that of the true male black redstart plumage, which Dr. Bree thinks only pertains to the breeding season of S. Tithys,—how could the continental naturalists determine such a bird from the gray redstart (*S. Cairii*), making the change to the black plumage of summer? I infer from this that neither S. Cairii nor S. Tithys make any change in spring; but that, like the stonechat, furzechat and wheatear, they carry the same plumage winter and summer. Certainly if the male of S. Cairii breeds in Cairii plumage, with such different habits as naturalists describe, it must undoubtedly be a true species or a distinct race. I feel no doubt that S. Cairii has occurred to me in winter in this county. Many years ago I had a bird caged that I could not call the female of either of our redstarts: it appeared at once a male bird by its *pure plumage* and energetic habits: its colour was a pure zinc-gray, and not the brown or smoky gray of the female redstarts: its tail and upper tail-coverts were much brighter red than those of an old male black redstart, and the abdominal region more white. During an absence from home it died. Before I commenced stuffing, or indeed thought of forming a collection, I used the red tails of County Dublin black redstarts for making fishing-flies. One snowy winter a groom of ours shot ten or twelve for this purpose, most of them *black*, but others pale zinc-gray birds, with brighter tails than male black redstarts, and *purer* coloured bodies than female birds: they chiefly frequented dung-hills, the ground being snow-bound: there were many more seen this year that were not killed. I still possess a head of one of these old male black redstarts, and till lately many red tail-feathers, but of the supposed S. Cairii I have no trace, except in memory, and that their tails made the brightest flies. Since then I have added males of S. Tithys (shot in mid-winter) to my collection, but neither females nor birds supposed to be S. Cairii. In previous numbers of the 'Zoologist' (Zool. 8034, 8445, 9433) I have recorded occurrences of the black redstart in this county.—*H. Blake-Knox.*

Titmouse's Nest in a Letter-box.—In the spring of 1863, while I was absent from home with my family, and the postman, in consequence, came but seldom to the house, a blue tit took possession of my letter-box, and built its nest in it, going in and out by the slit in the door, against which the box was attached. The bird covered the whole bottom of the box with moss and hay and feathers, and when I returned home there were four eggs in the nest; but in consequence of the necessary interruptions which our return occasioned the nest was forsaken. I have the four eggs still in my possession. —*Edward J. Moor; Great Bealings Rectory, Woodbridge, Suffolk, November* 3, 1869.

The Pennsylvanian Pipit, &c., at Bridlington.—The enclosed letters refer to a bird which I shot on the 20th of November, and which, on referring to Bree's 'Birds of Europe,' Dr. Boulton, of Beverley, Sir H. Boynton and myself decided was the tawny pipit (*Anthus rufescens*). I, however, communicated the capture to Dr. Bree, and having sent the bird for his inspection, you will observe that he and Mr. Sclater pronounce it to be the Pennsylvanian pipit (*A. Ludovicianus*).

"East Hill, Colchester, December 21, 1869.

"My dear Sir—I must apologise for not answering your letter in reference to the pipit sooner, but the fact is the bird is a puzzle: this is, I conceive, owing to its moulting condition. After careful examination I came to the conclusion that it is the Anthus Ludovicianus of my 'Birds of Europe.' The tail-feathers, however, being those of A. rufescens, I sent the specimen up to Dr. Sclater, the Secretary of the Zoological Society, from whom I had the type specimen of A. Ludovicianus figured in my work. From his reply you will see that Dr. Sclater confesses himself unable to decide the matter, but thinks I am right, and sends down the specimen I figured for me to compare:—'Dear Sir—I return the box with the pipit. It is certainly very like a faded specimen of A. Ludovicianus; but I am not sufficiently acquainted with this very difficult group to give you a decided opinion. I send you the skin you figured, which is from California, that you may form your own opinion. Yours, &c., P. L. SCLATER.' I will state to you the *pros* and *cons*. I never saw a tawny pipit in any plumage so thoroughly olive-green as your specimen, but still when the bird is taken out of the case there are the remains of real tawny colouring on the primaries, and the two outer tail-feathers are those of Anthus rufescens. The claw, however, of the hind toe is against us; it is longer than the toe, and this is a character of A. Ludovicianus: and again, your specimen is in all its measurements, length, length of wing from carpal joint, tarsus and beak, exactly those of A. Ludovicianus, which is altogether a smaller bird than the tawny pipit, and the beak is slightly declinated or curved at the extremity of the upper mandible—another character of A. Ludovicianus. The group is a very difficult one, but I think we may pronounce your specimen one of A. Ludovicianus in moulting plumage. The only other species likely to be confounded with it is our meadow pipit, but the hind claw decides this at a glance. I will send the bird down to Beverley to-day. Pray make use of this letter in any communication you may make to the 'Zoologist.' * * * Believe me, &c., C. R. BREE.

"PS.—You will notice that the base of the second tail-feather on its outer web is *dark*: usually in A. Luvovicianus the second feather is merely spotted with white at the end."

You will gather from Dr. Bree's *pros* and *cons* a description of the bird, with this exception, that the colour of the legs and feet is (or at least was when newly shot) a pale flesh, and this corresponds with A. rufescens. If you would like to see the bird I shall be glad to forward it to you for inspection. The pipit is a male bird, and was shot about three miles to the south of Bridlington, on the coast, and appeared to be feeding at the time on a sand-hill near to some long coarse grass. I have also received the following birds during the summer and autumn, *viz.*:—Sandwich tern (*Sterna Boysii*), shot on the 11th of August, at Bridlington Quay, by Mr. Walkington; a pair of dotterel (*Charadrius morinellus*), shot by Mr. G. Crowe, North Dale, Bridlington, on the 30th of September; the great snipe (*Scolopax major*), shot at Flamborough, by Colonel Hall, on the 20th of September.—*T. Boynton; Ulrome Grange, Lowthorpe, Hull, December* 27, 1869.

Shore Lark at St. Andrews.—An adult female of Alauda alpestris was shot in the Eden estuary, on the 31st of December, 1869, while in company of snow buntings. The bird is now in my collection.—*R. G. Wardlaw Ramsay; Whitehill, Lasswade, N.B.*

Siberian Lark at Brighton.—I have now, through the kindness of Mr. Swaysland, of Brighton, the two birds concerning which I promised, in my last communication (S. S. 1984), to give you more particulars. The one I believed might be a young snow finch is a specimen of the Siberian lark (*Alauda sibirica*), the first that has been recorded as occurring in Britain, and a very interesting addition to our list, as it is very rare even as a European species.—*Frederick Bond; 203, Adelaide Road, South Hampstead.*

[Mr. G. Dawson Rowley has favoured me with a note to exactly the same purport, and adds that Professor Newton acquiesces in this decision.—*Edward Newman.*]

Correction of an Error.—The bunting which I supposed to be a young male of Emberiza rustica turns out to be a young male of the Lapland bunting (*Plectrophanes lapponica*): the small size of the specimen deceived me, and I quite thought it was one of the small buntings that are so difficult to determine in their winter plumage. I am very much indebted to Mr. Gould for the trouble he has taken in going over his fine series of buntings with me to identify this specimen.—*Frederick Bond.*

Correction of an Error.—The citril finch mentioned in the same communication must also be struck out of my list. I regret very much that I have made such a mistake: the two birds are most certainly wild canaries. By the kindness of my friend Mr. J. J. Weir, who took the trouble of comparing skins of the wild canary with Mr. Monk's first bird, I now possess the skins he used for the comparison in my collection, and I find that the skin of the wild bird is identical with the specimen captured in November last, and the skin of the female bird, Mr. Weir tells me, is identical with Mr. Monk's first bird. I will be more careful next time, and will not trust to memory.—*Id.*

Bramblings near Woodbridge.—During December a large flock of the brambling have frequented certain beech plantations in the neighbourhood of Woodbridge, in company with chaffinches, with which, when feeding on the ground, constant warfare is kept up.—*Edward Charles Moor.*

Kingfisher's Nest in a Crag-pit.—On the 24th of last July I was requested by the head gardener of a gentleman in the next parish to come and see a kingfisher's nest in his garden. I accordingly went the same afternoon with my son. We were taken to the spot, which is a small crag-pit, forming a part of the garden premises—a place, close to which, and passing to and fro, are persons daily employed. In the crag-pit, and about seven feet from the ground, we saw the nest, with six young ones. They were about three-quarters grown, and were all pretty near to the edge of the hole: one young bird was very clamorous for food, and the rest were somewhat restless, but made no noise. We should have stayed to see the old birds feed them, but were told they seldom came in sight, and were very shy and crafty. The crag-pit is about three hundred yards in a straight line from a small river. The kingfisher had been seen at the hole in the spring, and I was told by an elderly labourer in the garden that he had known kingfishers build in that pit, off and on, for the last thirty years. I saw six or seven holes, like those made by sand martins, but I believe them all to be made by kingfishers, as the crag-pit is quite a small one, with bushes about it, and opening to the north, whereas the sand martin rejoices rather in a more, dry large and sunny locality: moreover, there were no sand martins about the pit, albeit they are not scarce birds in its neighbourhood.—*E. J. Moor.*

Reported Occurrence of the Ptarmigan in Yorkshire.—In the 'Zoologist' for December (S. S. 1951) I observed a paragraph headed, "White Partridges (? Ptarmigan) near Ganton, Yorkshire," in which Captain Bell quotes the statement of Mr. Grainger (in the 'Hull and Eastern Counties Herald') that "two brace of white partridges had been shot near Ganton," and concludes by expressing his opinion that the birds in question were "*probably* ptarmigan." Considering this extremely *improbable*, and there being no editorial comment appended to Captain Bell's remark, I thought it well to have all doubts upon the matter set at rest, as soon as possible, and accordingly wrote direct to Mr. Grainger, at Hull, to make some inquiries. I requested him particularly to examine the legs of the birds in question, and to inform me whether the *tarsi* and toes were *bare* as in the partridge, or feathered as in the grouse. The answer which he was good enough to send me is as follows:—"I am sorry to have been so long in answering your favor of the 1st of December, but I have been waiting until now (December 8th) to see the man who preserved the birds, in order that I might be better able to answer your questions. You are right in supposing these birds are *not* ptarmigan. I believe they are in every sense of the word partridges. They are of course not a snowy white: I should term them really cream-coloured. The birds have the *tarsi* and the toes completely bare, and not feathered. Moreover, they have a very light chestnut shoe on the breast, and this I imagine is possessed by partridges alone. I believe there were several more birds of this description in the cover at the time these were shot. I trust this information will prove satisfactory to you, and am," &c., &c. After the perusal of this letter there can be no longer any doubt on the subject, and I may take the opportunity of remarking that there is no evidence on record to show that the ptarmigan (*Gaelic*, tarmachan) has ever been found so far south as Yorkshire. The distribution of this species in the British Islands has been carefully investigated by Mr. A. G. More, and his observations on the subject which appeared in the 'Ibis' for 1865 (p. 427) are well worth quoting here. He says:—"At present the ptarmigan is confined to Scotland, though there are records of its having formerly inhabited Westmoreland and Cumberland. (See Pennant and other earlier writers). Heysham describes the ptarmigan as having become, in his time, very scarce in Cumberland, and he cites the lofty mountains about Keswick as the only locality known to him. There is a tradition of its former existence in Wales, but I have not been able to discover the original authority for this statement, which is repeated by both Macgillivray and Thompson, and in Graves' 'British Ornithology.' My valued correspondent, Dr. J. A. Smith, of Edinburgh, has copied for me, from a newspaper, a paragraph stating that the ptarmigan inhabits the county of Peebles; but this is the only authority for its occurrence so far south on the mainland at present. The bird inhabits Islay and Jura (*Thompson*), Mull (*Mr. H. D. Graham*), Dumbarton (*Mr. R. Gray*), Argyle, Perth, and all the counties northward. Mr. John Macgillivray found the ptarmigan sparingly in South Uist, and it has only recently been exterminated in Hoy."—*J. E. Harting.*

Bustards in Suffolk.—When I was a boy (now some fifty-five years ago) a man brought to my father, at Great Bealings, a female bustard, which he had shot in the parish of Marltesham: he asked ten shillings for it, but he was advised by my father to take it to Mr. Seaman, of Ipswich (a celebrated bird-stuffer in those days): he easily obtained his price from Mr. Seaman, who stuffed the bird and made a good profit by it in London. I asked the man who shot it for a feather of the bustard, which he gave me, and which I had in my possession for several years. This was the first and last time I ever saw a bustard that had been taken in Suffolk. About the year 1824 I was staying at Oxburgh, in Norfolk, and went with a friend to the house of the Rev. R. Hammond, in Swaffham. Among other interesting cases of British birds, stuffed by himself, was one containing one male bustard, two female bustards, one very small bustard (about six weeks old) and one bustard's egg. Mr. Hammond's account of that case to me was as follows:—A man brought to him one of the female bustards, which he had shot, and which Mr. Hammond bought and stuffed, &c. Soon after this Mr. Hammond heard that a bustard had been more than once seen flying over a large field near Swaffham: he with his servant went, towards sunset, to lay wait for it: they saw it, but it did not come within shot of either of them. They went to the same field next day and took up their positions, though not exactly on the same spot: the bird came again, and flew within a long shot of Mr. Hammond: he fired, and the bird dropped about a foot: it was evidently hit, and made a somewhat sudden turn and flew over one end of the town: he and the servant took accurate bearings (by two chimneys) of the bird's flight, which was in a straight line. It was then getting dark, and next morning, as soon as it was light, they started to look for the bird: they walked a few yards apart; they went across one field, then over the hedge into the next, holding a straight course. In the middle of the second field, which was a large one, they saw some object on the surface, which they hoped might be the bird: so it proved to be, and when within shot it was agreed that Mr. Hammond should try to throw himself on the bird, and so to secure it (for they were sure it was wounded and weak): should Mr. Hammond fail, the servant was to shoot; but when quite close Mr. Hammond saw that the bird was dead. It proved to be a magnificent male. Not long afterwards he was shooting in a field of turnips near Swaffham: his dog made a point, and on Mr. Hammond going up to him and trying to urge him on he refused to move, and on narrowly looking near the dog's head, he perceived almost between its feet a dead female bustard, in excellent preservation. After this a man brought him two bustard's eggs, which he had found near Swaffham: Mr. Hammond blew one of them and put the other under a turkey, which hatched it in due time, and it got on very well with the rest of her brood; when one day Mr. Hammond thought that a little bustard would look charmingly in the case with the other three and the eggs, and besides he tried to persuade himself that the little pet might be stolen from him by rats, &c.: so with rather a heavy heart he signed its death-warrant, and there it was in the case when I was at Mr. Hammond's, looking like a little prince in the midst of its royal companions. I fear the bustard will soon be no more than an historical bird in England. I forget what Mr. Hammond said he would *not* take for that case of bustards; but it was a long price.—*Edward J. Moor.*

Avocet, Bittern and Gray Phalarope at Hastings.—I was shown to-day an avocet, in immature dress, one of a small flock of three shot at Rye during the snowy weather in the latter part of December. A bittern was hanging up with a young heron at one of the game-shops here last week: the dealer told me it was the second he had received lately, amongst other wild-fowl, from Lincolnshire. A gray phalarope was shot on the beach last Thursday. The weather to-day is very wintry-looking, and a heavy sea on in the channel.—*Alwin S. Bell; Hastings, January* 18, 1870.

The American Stint at Northam Burrows.—Mr. Rodd has asked me to communicate some particulars with reference to the American stint referred to by him in the 'Zoologist' for December (S. S. 1920) which was shot by me on the 22nd of September last, and I have much pleasure in complying with his request. I observed the bird on several successive mornings before I obtained it on a salt-marsh lying between Northam Burrows and the estuary of the rivers Taw and Torridge, and on every occasion it was alone. It seemed very active and restless, and was rather difficult of approach. When it rose it always repeated a short hurried note, similar to that of the two other species, though perhaps rather shriller and more frequently reiterated (differing in this particular from Mr. Vingoe's specimen, which was silent when it rose). Its flight was strong and rapid for so small a bird, and struck me as being something like that of the common sandpiper, which bird indeed (except with regard to the vibratory motion of the body peculiar to that species) it somewhat resembled in its movements when on the ground. It always flew away across the water out of sight and at a great height, but it invariably returned to the same spot where I had first observed it. I had no difficulty in identifying the bird as distinct from either of the two British species of stint, and a careful comparison of it with the description of Mr. Vingoe's specimen of the American stint in Newman's edition of Montagu's Dictionary, led me to think that it would prove to be a second British specimen of that species—a supposition the accuracy of which was kindly tested and established by Mr. Rodd and Mr. Vingoe, to whom I sent it for inspection. The specimen is now in my possession. It is a male bird, and as far as I can judge, in full plumage, which is of a very much darker shade throughout than that of Tringa minuta. The measurements and description generally correspond pretty nearly with those of Mr. Vingoe's specimen, as given in Newman's Dictionary, though the difference between the species in question and the two British species appear perhaps to be a little more pronounced in my specimen than in his. One point alone of actual dissimilarity may be noticed, and this may be very likely owing to a diversity of age or sex. In his specimen the legs were grayish yellow; in mine they are greenish gray, strongly inclining to the former tint. I think the occurrence of the bird may most probably be attributed to the prevalence of south-westerly gales, of which we had had a succession for many days previously.—*Marcus S. C. Rickards; Clifton, December* 10, 1869.

Gray Phalarope, Little Stint and Snow Bunting at Northam Burrows.—I obtained a specimen of the gray phalarope at Northam Burrows on the 24th of September last. When I noticed it, it was swimming in a small inland pond in the near neighbourhood of some ducks. It is in a transition state of plumage, and though a male specimen is of an unusually large size, measuring fully ten inches in length. I saw another specimen in the birdstuffer's shop at Barnstaple, which had been shot on the banks of the Taw about the same time. It was, however, a much smaller bird, and more advanced towards winter plumage. I also shot a specimen of the little stint at Northam Burrows on the 29th of September last, and a snow bunting on the 2nd of October.—*Id.*

Pintail Duck on the Severn.—On the 25th of October last I shot a specimen of the pintail duck at the mouth of the Severn, near the New Passage. It was alone at the time. It is a male bird, and though of full size has not yet attained to the plumage of maturity.—*Marcus S. C. Rickards.*

Common and Sandwich Terns at Spurn.—I see in the December number of the 'Zoologist' (S. S. 1944) Mr. Cordeaux says the common and Sandwich terns breed at Spurn. I am sorry he has been misled respecting these two species, as neither of them do breed, or ever have bred, there to my knowledge. The colony consists exclusively of the lesser tern, and, to use Mr. Cordeaux's remark, their breeding is all a farce, as the boys, and most of the men, too, make a practice of taking every egg they can find, most of which they destroy.—*F. Boyes; Beverley, Yorkshire, December* 22, 1869.

Little Gull at Coldingham.—When at Messrs. Small and Son's, birdstuffers, in Edinburgh, the other day, I saw, in the flesh, an immature female of the little gull, shot at Coldingham, on the 27th of December last.—*R. G. Wardlaw Ramsay.*

Rare Birds in the Neighbourhood of Plymouth.—During the month of December, 1869, the following rare birds have occurred in the neighbourhood of Plymouth:—

Little Auk. A few days since I examined a specimen of the little auk (*Alca alle*), which had been knocked down, on the 19th of December, by a boy with a stone, on the river Plym, by Cann Wood—a rather strange place for such a bird, on a trout stream running through a wood, full six or seven miles from the nearest part of the coast; but no doubt it had been driven so far inland by the severe gales which happened about the time. The boy, I understand, was with some others hunting squirrels when he caught sight of the bird on the stream.

Black Redstart. Some black redstarts (*Phœnicura tithys*) have appeared on the coast, four of which I have obtained and sent to as many ornithological London friends. I have an idea that the same black redstart must sometimes revisit a favourite locality for a succession of years, as last winter I observed a splendid old male on a certain part of the coast, which I hunted for several days, but notwithstanding my vigilance he always managed to escape by hiding in and under particular rocks and caves. Now, strange to say, I have this year at the same place several times seen and chased a bird exactly similar in plumage and action, which has again managed as yet to dodge me and escape in a similar way, which makes me feel certain it must be my old friend of last year. A rather curious and interesting incident happened the other day when looking for redstarts on a very wild part of the coast. On taking my lunch with a friend among the rocks a robin came down, and, perching on a rock near, seemed to be intently watching our actions; on observing which I said to my friend, "Surely that robin wants to be invited to lunch," and throwing a crumb towards it, I exclaimed, "Come along, then, old fellow," when to our great surprise, down it instantly flew close to our feet, made a hearty meal, and examined our papers the instant we left. I should have thought very little of this incident had it happened in a village or near a house, but on such a wild part of the coast I certainly did think it rather strange, and after such innocent confidence shown by the little bird I could not have shot at even a redstart that day had I seen a hundred. I do remember once pitching a crumb to a blackheaded bunting during a severe snow-storm, which it picked up, but the affair with the robin occurred during mild weather. It is quite surprising to observe the quantity of robins that frequent the wildest parts of our rocky coasts during winter, flitting in and out among the rocks and caves (undercliff) all day long.

Iceland Gull. On the 6th I saw an Iceland gull in the Plymouth Sound.—*J. Gatcombe; Stonehouse, Plymouth, December* 31, 1869.

Dates of the Breeding of Birds on Tyneside for 1869.—Eggs of the following birds were obtained on the dates subjoined:—March 22nd, longeared owl; 26th, tawny owl, cushat and rook; 28th, common thrush; 30th, peewit; April 3rd, missel thrush and dipper; 11th, woodcock; 15th, snipe and pheasant; 17th, blackbird and common wren; 18th, curlew and jackdaw; 20th, chaffinch; 25th, robin, longtailed tit and goldencrested wren; May 1st, golden plover, pied wagtail and ring ouzel; 9th, partridge, creeper, kestrel and sparrowhawk; 10th, marsh tit and grasshopper warbler; 16th, French linnet, blackheaded gull, gray wagtail and twite; 22nd, common sandpiper; 25th, wood wren and cole tit; June 10th, corn crake and night hawk.—*Thomas Thompson; Winlaton.*

Starling feeding on the Grubs of Phyllopertha.—Two or three acres of my lawn are riddled throughout by the bills of the starlings seeking the grubs of the small brown chaffer which so spoils our roses, especially the yellow ones. I notice that they gape when they put their bills into the earth, as if to open a hole that they may see in between the mandibles. I have always had starlings here, but they seem only of late years to have discovered this rich mine. Some years ago the place was overrun by these beetles, and I have seen them issuing new-born from the ground by tens of thousands: they are now scarce, and the grass of the lawn is much improved. It is just when the rooks are thus destroying the grub of the cockchaffer that they are shot down as their enemies by the farmers. Two months ago I had a bee-eater here feeding upon the yew-berries. No locusts.—*W. C. Hewitson; Oatlands, January* 26, 1870.

Eggs of the Cuckoo.—I do not hear of any vari-coloured eggs of the cuckoo. I have seen several of the eggs here since the controversy, but they were all gray, like those of the pied wagtail.—*Id.*

Pilchards in Mount's Bay on Christmas Day.—Several large shoals of pilchards (*Clupea pilchardus*) were captured off Mullion, in Mount's Bay, on the 25th of December. The occurrence of shoals of pilchards off the Cornish coast in December, and even later in the winter, is not unusual, but they generally appear east of the Lizard. Two years ago a shoal was taken in Truro river (a salt-water estuary) in February. Last year there was a large catch of pilchards at St. Ives in the second week in December. In 1831 there was a catch off St. Michael's Mount in the week before Christmas; but the present catch is, I believe, the latest in any season recorded in Mount's Bay. It yet remains to be seen whether this fish is getting later throughout its whole season of migration year after year (it certainly is in its arrival), or whether a Christmas fishing season is simply the result of a longer watching than usual on the part of the fisherman. The fish were very fine, and in excellent condition. There were several small mackerel with the shoals, but this is not unusual.—*Thomas Cornish; Penzance, December* 28, 1869.

Note on the Odour of Cynipidæ and other Hymenoptera.—On the 15th of November I mentioned at the meeting of the Entomological Society that I had met with a peculiar odour in Cynips lignicola, as well as in an undetermined species of Cynips bred from a pea-gall on the under side of oak-leaves. When the meeting was over Mr. Boyd kindly handed me some galls of Biorhiza aptera, *Fab.*, from which I have since bred a number of females, all of which on being handled alive emitted a powerful scent, like that of a very ripe pear. I have also detected a similar but fainter odour in Cynips folii, *Linn.* If we turn to other groups of Hymenoptera, the pungent quality of many of the Formicidæ will of course occur to every reader; and as regards Crabronidæ, Mr. T. J. Bold has long ago recorded, in the 'Zoologist,' of Crabro cetratus of Shuckard, that when he pinned the latter they "emitted a powerful perfume, somewhat resembling that of roses." Professed hymenopterists will no doubt be able to add numerous instances in other groups, particularly in the Apidæ.—*Albert Müller; South Norwood, S.E., December* 7, 1869.

PROCEEDINGS OF SOCIETIES.

ENTOMOLOGICAL SOCIETY.

December 6, 1869.—H. W. BATES, Esq., President, in the chair.

Donations to the Library.

The following donations were announced, and thanks voted to the donors:—'Eugenie's Resa' (Hymenoptera by A. E. Holmgren, Diptera by C. G. Thomson); and 'Hemiptera Africana,' by C. Stal, vols. i.—iv.; presented by the Royal Swedish Academy of Sciences. 'Entomologische Zeitung,' 1869, Parts 7—12, and 1870, Parts 1—3; by the Entomological Society of Stettin. 'The Zoologist' for December; by the Editor. 'The Entomologist's Monthly Magazine' for December; by the Editors.

Election of Members.

The following gentlemen were severally ballotted for, and elected Members:—M.M. Gustave d'Emerich, of Pesth; l'Abbé de Marseul, of Paris; Charles Oberthur, fils, of Rennes (Foreign Members); and Captain Lang, R.E., of Reigate; and Messrs. W. Arnold Lewis, of The Temple; J. Cosmo Melvill, of Manchester; and Howard Vaughan, of Kentish Town.

Exhibitions, &c.

Prof. Westwood exhibited drawings and dissections of some Hymenoptera possessing extraordinary structural peculiarities: they were principally Chalcididæ, of the genera Prionopelma and Metapelma (see Proc. Zool. Soc. 1835).

Mr. F. Smith exhibited a mass of earth-cells formed by a species of Halictus, found by Mr. J. K. Lord near Cairo. The bee burrowed into the ground to a depth of about twelve inches, and the cells were then formed, close together, and all round the shaft or tunnel, the entrance to each cell being from the central shaft. Mr. Lord described the bee as making a tubular entrance to the nest, probably of the material which was thrown out in the excavation of the vertical shaft, but the construction was too brittle or fragile for transport. Mr. Smith remarked that this tubular entrance was after the manner of Odynerus spinipes, but it was the first time he had heard of any species of bee forming such a construction.

The President said that some species of Melipona, which form their nests in the hollows of trees, construct a trumpet-shaped entrance of waxy material, or of some substance held together by a waxy cement.

Mr. F. Smith exhibited a larva-case, which he supposed to belong to a species of Œceticus, found by Mr. J. K. Lord in the plains near Mount Sinai: numbers of the larvæ were seen crawling on the sand, no tree or bush being near, and the only plant growing in the neighbourhood being a species of wild sage. The larva-case appeared to be formed principally of pieces of grass, arranged longitudinally.

Mr. J. Jenner Weir exhibited two specimens of Heliothis armiger, bred from larvæ which fed in tomatoes. An importation of tomatoes from Spain or Portugal had been greatly damaged by a number of green larvæ, with black lines and spots, which fed in the fruit, where there was apparently juice enough to drown them, and which ultimately produced the moths exhibited.

Prof. Westwood exhibited drawings and dissections of several remarkable new forms of Pselaphidæ.

Mr. Albert Müller exhibited a photograph of a Coleopterous monstrosity, a specimen of Pterostichus Prevostii with eight legs: on either side of the left hind leg (*i. e.* before and behind the normal hind leg) was a supernumerary limb of somewhat stunted growth, but structurally perfect: there were apparently three distinct coxæ fitting into three separate sockets in a single expanded trochanter. The beetle was found in Switzerland, and Mr. Müller had seen it alive: the extra legs were simply carried, and not used to assist in locomotion.

With reference to the locust exhibited at the previous Meeting (S. S. 1990), the President had received the following from Mr. Edwin Brown:—

"I am informed that when my specimen of a new locust was exhibited at the last Meeting of the Society, it was suggested that the occurrence might have been brought about by the introduction of the insect into the brewery in an empty returned cask. I think such a suggestion is untenable, inasmuch as two specimens of the same species were captured in different parts of the town of Burton-on-Trent, and one caught in Birmingham certainly belongs to the same species. There were several other instances recorded in the papers about the same time of locusts having been captured in Worcestershire, in Nottinghamshire, and at Waterford. It has not yet been proved that these examples were all of the new species, but it is highly probable that this was so, as the peculiar positions in which the locusts have been captured this year all indicate, if I may so term it, an unsophisticated disposition of the animal, widely different from that of Locusta migratoria, which has nearly always been found in fields or gardens, whilst the species of this year has been captured in two brewery yards, in the room of a house, upon a man's coat, and (it is said) upon a lady's bonnet, but looking at the difficulty an animal so large would find in getting standing room upon a modern bonnet, there may possibly be some mistake as to the last-mentioned locality. Mr. F. Walker has identified the species as Acridium peregrinum of Olivier, which is dispersed over a large part of Asia and Northern Africa, but has not hitherto been found in Europe."

(See also, on the recent occurrence of locusts in this country, Newman's Entom. iv. 367.)

Paper read.

The following paper was read:—"Note on Boreus hyemalis and B. Westwoodii," by Mr. M'Lachlan.

January 3, 1870.—H. W. BATES, Esq., President, in the chair.

Additions to the Library.

The following donations were announced, and thanks voted to the donors:—'Proceedings of the Royal Society,' No. 115; presented by the Society. 'Proceedings of the Linnean Society,' 1869; by the Society. 'Bulletin de la Soc. Imp. des Naturalistes de Moscou,' 1868, No. 4; by the Society. 'Mittheilungen der Schweizerischen Entomologischen Gesellschaft,' vol. iii. No. 3; by the Society. 'The Tineina of Southern Europe,' and 'The Entomologist's Annual for 1870;' by H. T. Stainton, Esq. 'Equatorial Lepidoptera collected by Mr. Buckley,' Parts 1—3; by W. C. Hewitson, Esq. 'Lepidoptera Exotica,' Part 3; by E. W. Janson, Esq. 'Observations on the Parasitism of Rhipiphorus paradoxus;' by Frederick Smith, Esq. 'Réflexions et Expériences sur le vol des Coléoptères; by M. Felix Plateau. 'Petites Nouvelles Entomologiques,' Nos. 1—12; by the Editor. 'The Zoologist,' for January; by the Editor. 'The Entomologist's Monthly Magazine,' for January; by the Editors.

The following additions by purchase were also announced:—Palisot de Beauvois, 'Insectes recueillis en Afrique et en Amerique;' Ehrenberg & Klug, 'Symbolæ Physicæ;' Brullé et Blanchard, 'Voyage de d'Orbigny;' Motschulsky, 'Etudes Entomologiques;' and Lowne, 'The Anatomy and Physiology of the Blow-fly.'

Exhibitions, &c.

Mr. Hewitson sent for exhibition a collection of butterflies, including 135 new and many rare species, all in beautiful condition, collected by Mr. Buckley in Equatorial America. With two exceptions, Heliconia Cythera and Terias Ecuadora, which were taken on the west side of the Andes, the new species were all captured between St. Ines and St. Rosa on the River Napo, within two degrees of longitude, and descriptions thereof were in course of publication under the title of 'Equatorial Lepidoptera collected by Mr. Buckley.'

Mr. Buckley (who was present as a Visitor) gave some interesting details of his stay in Ecuador. In reply to enquiries, he stated that the localities for each species were carefully noted at the end of each day's collecting; that generally speaking there seemed to be a species of Heliconia peculiar to each valley; that a few species occurred on both sides of the Andes, and in particular a Heliconia and a Morpho were mentioned; and that there was great difference in the altitudes at which the exhibited insects were collected, some of them, and in particular a Pronophila, having been taken above the snow-level.

Prof. Westwood, as an instance of partial gynandromorphism, in which the union of the opposite sexual characters was confined to a single limb, exhibited drawings of a specimen of Anthocharis Cardamines, the wings of which, for the most part male, partook to some extent of the colour and character of the female, as if pieces of the wing of the male had been cut out and replaced by pieces of the wing of the female.

Mr. Bond mentioned that a considerable number of the locust, Acridium peregrinum, had been taken in Cornwall in October: some were captured at Falmouth, and about thirty in or near Plymouth, of which two were exhibited: most of them were found in the streets and yards of the town.

Prof. Westwood, on behalf of the Rev. Leonard Jenyns, exhibited a species of Aphodius (probably A. lividus), which was said to be frequently vomited by South-African Hottentots, who are notorious as unclean feeders; and a species of Elateridæ which was found in April, 1869, floating in a cup of tea at Bath, and was recognized by Mr. Janson as an eastern species of the genus Heteroderes.

Prof. Westwood also exhibited drawings of some new Australian Lucanidæ, of the genus Lissotes.

Mr. Pascoe exhibited a number of Curculionidæ, of the genus Catasarcus, in illustration of the paper mentioned below.

Mr. Albert Müller exhibited photographs of aberrations of Abax parallelus and Clerus formicarius; the former remarkable for its zigzag striation, the latter for the union of the two white bands of the elytra.

Mr. Quaritch (who was present as a Visitor) made a communication respecting the book-worm.

Papers read.

The following papers were read:—

"On some new British Species of Ephemeridæ;" by the Rev. A. E. Eaton.

"Descriptions of six new species of Callidryas;" by Mr. A. G. Butler.

"A Revision of the Genus Catasarcus;" by Mr. F. P. Pascoe.

"The Genera of Coleoptera studied chronologically (1735—1801);" by Mr. G. R. Crotch.

New Part of 'Transactions.'

Part 5 of the 'Transactions for 1869,' published in December, was on the table.

Annual Meeting, January 24, 1870.—FREDERICK SMITH, Esq., Vice-President, in the chair.

An Abstract of the Treasurer's Accounts for 1869 was read by Mr. J. Jenner Weir, one of the Auditors, and showed a balance in favour of the Society of £125 6*s.* 3*d.*

The Secretary read the Report of the Council for 1869, from which the following is extracted:—

"During the year twenty-one Members or Subscribers have been elected, but seventeen names have been removed from the list; the numerical gain is therefore reduced to four.

"The volume of 'Transactions for 1869' includes twenty-seven memoirs by seventeen authors, extends to four hundred pages exclusive of the 'Proceedings,' and is illustrated by six plates, of which two are coloured. To Messrs. E. Saunders, Higgins, Butler, F. Smith and M'Lachlan, the Society is indebted for the drawings in illustration of their respective memoirs. Every paper read, down to and inclusive of the December Meeting, was actually published before the end of the year. Especial attention is called to Dr. Sharp's Revision of the British Homalotæ, as affording tangible proof of the desire of the Council that native Entomology shall receive its due share of attention. There is yet a dearth in the 'Transactions' of papers relating to British or European insects. Many of the most active students of the productions of our own islands do not favour the Society with the results of their labours, and thus exotic Entomology obtains the lion's share of our pages; and this leads to a supposition that our entomologists do not sufficiently identify themselves with their continental brethren. We are either exclusively British, or our range includes the whole world; and thus, between the insularity of some and the universality of others, European insects (in the broad sense) occupy but an insignificant portion of our publications. From this cause, perhaps, results the small number of our Foreign Members; and, as a consequence of that smallness, some who do give European insects a prominent place in their studies prefer to publish through the medium of Continental Societies, believing that they thereby obtain a wider circle of appreciative readers than if their lucubrations appeared in our 'Transactions.'

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"It has been decided to renew the offer, suspended for the last two years, of Prizes for Essays on Economical or Structural Entomology. Further particulars will be announced, probably at the next Meeting.

"In spite, then, of the comparative depression which has generally prevailed throughout the year 1869, the prosperity of the Society has been maintained. Our numbers have increased, we have added largely to our Library, the interest of our Meetings has been well sustained, our publications have been issued with regularity and dispatch, and our balance is larger than at the last Anniversary. Each of these is a fair criterion of success; the combination of them all warrants the Council in believing that for the future the future will provide."

Mr. Pascoe proposed, and Mr. Wallace seconded, a special vote of thanks to Mr. W. Wilson Saunders for the munificent gift mentioned in the Report; and this was carried by acclamation.

The following gentlemen were elected Members of the Council for 1870:—Messrs. H. W. Bates, Dallas, Dunning, Fry, Grut, M'Lachlan, Parry, Pascoe, Salvin, Edward Saunders, S. Stevens, A. R. Wallace and Wormald.

The following officers for 1870 were afterwards elected:—President, Mr. Alfred R. Wallace; Treasurer, Mr. S. Stevens; Secretaries, Messrs. Dunning and M'Lachlan; Librarian, Mr. E. W. Janson.

The President's Address (in the unavoidable absence of Mr. Bates) was read by the Secretary.

A vote of thanks to the President for his services during the past year, with a request that the Address might be printed in the 'Proceedings,' was proposed by Mr. Fry, seconded by Mr. Grut, and carried unanimously.

Thanks were also voted to the other Officers and Members of the Council for 1869, and to the Chairman; and were suitably acknowledged.

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Proceedings of the Entomological Society, 2028.

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